# The Builder.

VOL. XX.—No. 991.


## *The Condition of Glasgow.—Survey of our Towns.*

HOWEVER anxious we may be to avoid errors, and our correspondents to afford correct information, a slip in figures will occasionally occur. Thus, in speaking of the tunnel on the Edinburgh and Glasgow railway beginning at *Cowlairs** (not "Carstairs"), the cost is stated at nearly 2,000,000*l.* The amount given to us by one who should know was, "nearly 200,000*l.*," and even this sum is pronounced too large by others. A commentator anxious to discredit the real point and intention of our articles, is of course willing to reply to such an obvious misprint rather than tackle the real question at issue. The thinking part of the population, however, will not suffer their attention to be thus led away.

In the previous papers concerning Glasgow we had to describe a city which, in the natural progress of opulence, has increased in population like a township in Texas, and in wealth like an Italian republic of the Middle Ages. We must now, like faithful historians, reverse the picture, and show that this sunlight has its shadows. A different class of travellers than Smollett and Defoe began in our generation to record their observations on Glasgow. In the year 1839, Mr. Jellinger Symonds, one of the assistant commissioners on the hand-loom inquiry, described Glasgow as a city in which population and commerce had exceeded all ordinary experience; but in which disease and drunkenness, depravity and crime, had arrived at their climax. Ten years later, Mr. Edwin Chadwick, in his general sanitary report, tells us that the population he found in the wynds and closes of Glasgow was the worst he ever saw, or of which he had been able to obtain any account. The reader will be able to judge how far our humble experience supports this view. We know something of the worst parts of London. We have, in course of this inquiry, examined the slums of Stafford and Wolverhampton, seen the filth of Newcastle-upon-Tyne, and inspected the nuisances of Shrewsbury; yet we must acknowledge that the condition of the lowest districts and the lowest classes of people we saw in Glasgow took us by surprise. Since our first visit, some years ago, much has been done in the shape of reform. But enough remains to warrant the strong assertion that no other part of the British empire presents more extreme features of misery and wretchedness than Glasgow.

Within a circle of ten minutes' walk from the Police-office, in Albion-street, we plunged into a labyrinth of the most horrible closes and wynds we ever saw. Situate on both sides of the High-street, the Gallowgate, the Salt Market, and the Trongate, these closes may well represent the minute ramifications of vitiated arterial blood. The same features were strongly developed in the whole; that is to say, old, crazy, dilapidated, and sometimes ruinous tenements, teeming with inhabitants of every age and of both sexes. The Pipehouse-close, leading off the High-street, was the first we examined. The "lands" here are usually five or six stories in height. Most of the apartments, as far as we could guess, were not above 9 or 10 feet square, and 7 or 8 feet in height. In such an apartment sometimes two families ate their meals and slept together. There was not the slightest provision for ventilation; in some cases there was no provision for light. Of course there was no drainage; and we will not pretend to describe the effect of this in producing surface filth. In one cellar in a close in the Gallowgate, without a window, we found an old applewoman living. She was nearly eighty years of age. She said, in reply to our inquiry, that the place "was not what she would like;" but she added, with a tone of resignation, that she had not very long to live, and that it would last her day. One close, called "the dark close," leading off the Salt Market, is walled in, and built over with the surrounding and superincumbent buildings; yet the hovels in this close were all crowded with population, chiefly women and children, the male portion at the time of our visit being absent.

The salt-market of Glasgow, immortal in story, has undergone one of those changes which, in the progress of civilization, mark the fate of certain nations. It is in a state of chronic decay. Nothing, we suspect, can save it from ultimate destruction. A narrow slimy roadway was absolutely swarming with squalid groups of unfortunate women and their criminal *confrères* of the opposite sex. We could observe here misery and degradation in their most revolting aspect. In one of its narrow filthy closes we came across a phenomenon which those who have minutely studied the lower districts of large towns will alone understand. This was a large, dingy, ominous-looking tenement, called "The Free Land," which, if it have a proprietor, has at least given him no rent for twenty-five years. It is inhabited, of course, by the very *élite* of the *classes dangereuses;* that is to say, by the greatest felons and the worst prostitutes in the city. This free land, we were informed, was the scene of many a midnight crime. We could scarcely look at the place without the inquiry unconsciously arising in our mind,—What a struggle for existence must virtue have there? Of the condition of one of the miserable inhabitants the following lines from Coleridge are all we need give as a description:—

> "So here he lies,
> Crusted with evil till his very soul
> Unmoulds its essence, hopelessly deformed
> By sights of ever more deformity."

What are called "the wynds" of Glasgow, *par excellence*, are a number of narrow crowded alleys, leading from the Trongate to the Bridgegate. We will not describe them in detail. And it is but fair that we should state they have of late years been signally improved. Some of the most ruinous tenements have been pulled down; better houses have been built. A church has been erected in the very heart of the district. We observed also a public privy and a public well attached to every close; improvements in the right direction, although quite insufficient. The courts in the Gorbals district—the Southwark of London—which we visited, are in a worse condition with respect to paving, drainage, and water supply, than some of the wynds.

It is painful to dwell on the over-crowding of these districts. All will observe the superabundance of females, and particularly the number of infants at the breast. This fact, taken in connection with our recent statistics, may shed some light on the cause of what is in truth the greatest blot on the Glasgow escutcheon—its high rate of infantile mortality. It is well known that a low or high rate of infantile mortality is the surest test of health or disease in a community. Now, in Glasgow, 50 per cent. of children born die under five years of age. If this startling result, which appears on the very front of all the Glasgow mortality tables were not enough, we have before us another element of a still sadder complexion. Glasgow has also the highest proportion of still-born children in the kingdom; the ratio is one to every twelve births.

We will not pretend to say that this enormous infantile mortality is altogether due to sanitary defects, for other causes are at work. In the first place, the proportion of births is larger in Glasgow than in either London or Paris; for it is a law of nature that, when children die quickly, they are produced quickly. Secondly, females in Glasgow are often called upon by necessity to labour hard when their situation demands repose. In the third place, the morals of the Glasgow poorer classes seem to need attention. For example, during the year ending September, 1860, the bodies of twenty-five new-born infants were found by the police exposed in the streets; and we confess it was not without a feeling of horror and astonishment we learnt that, in the same year, upwards of one hundred helpless innocents had died of poison, drowning, suffocation, burning, and want of breast milk.

The Glasgow people themselves attribute this frightful evil exclusively to the Irish or Roman Catholic portion of the population: In the year 1852 it was pointed out that the Roman Catholic children under five years of age constituted forty-five per cent. of the whole deaths from small-pox throughout the city. The parents had, it should seem, a superstitious horror of vaccination. This Irish population is most formidable in point of numbers. Dr. Strang estimates the amount at 100,000,—nearly one-fourth of the whole population of Glasgow; for, although the figures by the last census only appear as 60,000, it cannot be supposed that the number of Irish *natives* affords an adequate idea of the real number of Irish *inhabitants*. The children born in Glasgow, or elsewhere, during the last ten years, figure in the enumeration returns as *Scotch*, although they must needs be imbued with the habits, sentiments, and religion of the inhabitants of the sister island. Indeed, this Irish element would seem to be a social difficulty of great magnitude with Glasgow. The opposition of races and creeds, of skilled and unskilled labour, is everywhere conspicuous. The evil, we believe, was peculiarly exemplified during the years of the Irish famine, when hundreds of poor families were found daily hurrying to Glasgow as a city of refuge, clad in the last rags of poverty, and exhibiting the last symptoms of famine fever. But thousands who fled from their miserable and starving homes in Munster and Connaught only arrived in Glasgow to find their graves. Of course, the children were not long in following the parents.

While, therefore, we must admit, to some extent, the truth of this inference, it is impossible to say that it contains the whole truth. In the first place, the Irish population is not all poor; and secondly, the Scotch population is not all rich. There is a considerable intermixture of Scotch in the Roman Catholic people. Again, the statistics of all European countries show that it is not the poorest parents who commit child-murder. Finally, there are fewer illegitimate births among the Irish than the Scotch—an element in mortality-tables that sanitary economists will understand better than we can describe.

And the truth is, we suspect, that the Glasgow

* See page 1, *ante*.

closes, wynds, and vennels, are about the most unhealthy places in Europe. The next worst, in all probability, are the closes of Edinburgh. But in Edinburgh the east wind which prevails more than two-thirds of the year, and kills off the aged and delicate inhabitants with frightful certainty, blows through the narrow alleys, 200 feet above the level of the sea, like air in the funnel of a blast furnace. Notwithstanding their defective drainage, these closes are thus at once ventilated and purified. In Glasgow, on the other hand, which has a predominating west wind, surcharged with moisture, where it rains every alternate day —that is, on the average, exactly six months in the year—and where the soil is marshy, comparatively level, and ill drained, the poor inhabitants are literally condemned to breathe the noxious gases which proceed from their own refuse. There is another element: they are also condemned to breathe the poisonous gases of the innumerable manufactories by which they gain their subsistence, most of which are discharged by the chimneys, but not a few are discharged into the drains.

It may seem that we dwell with a painful pertinacity on this subject of drainage. We were told in Glasgow, when inquiring as to the infantile mortality, that the drainage had nothing to do with it. But it is surely too late in the day for us to show the connexion with that and other sanitary evils. Some reformers, indeed, among whom we mention Lord Shaftesbury, go so far as to hold the doctrine that crime is no longer dependent upon poverty or high wages, but is invariably to be found most abundant in filthy and overcrowded districts. But whether this hypothesis be correct or not, there is nothing more certain than the fact that the first, most essential, and most absolute condition of human existence is an abundant and ever-changing supply of pure air. Now the Glasgow closes do not possess this. As we have previously stated, they have no underground drains; and are supplied, where they are supplied at all with necessary convenience, by public privies. These, however, will never bring about a pure sanitary condition, since they only serve to accumulate the noxious gases in particular spots; and the fact is that the Glasgow authorities are so annoyed, and no wonder, at the pollution of their noble river, that they prefer the principle of cesspools to the principle of sewers. But of all means of getting out of the difficulty, this is about the worst. Whether a covered sewer or an open ditch is the best channel for drainage has long been a settled question among civilized people.

But it also happens that the liquid refuse of the chemical works, gas works, distilleries manure-manufactories, &c., is discharged into the common sewers, and then the smell created is insufferable. It was stated to us on competent authority, that in the district of St. George's-road, the gases evolved from the gully-holes of the common sewer were so poisonous as to create fever. Even in the fashionable crescents of the west-end, we have ourselves been painfully sensible of a highly-vitiated atmosphere. Thus we may conclude that the subtle poisons of the sewer gases exercise as deadly an influence on the richer quarters of the city as the surface ordure does on the dwellings of the poor. This, we must point out, is a most serious calamity. We have no hesitation in saying that the inhabitants of Glasgow had better inhale the smoke which proceeds from the tall chimney of St. Rollox Chemical Works, than the gases which are evolved from their sewers. In the one case the evil is palpable and apparent: in the other it is latent and unseen; silently entering the overcrowded drawing-rooms and the solitary bed-rooms, and doing its work, without the knowledge of its victims. In all commercial cities where the local manufactures are a source of wealth and revenue, the community are somewhat too apt to overlook their defects. But the day must soon arrive when no manufacture, however lucrative, shall be permitted to contaminate the atmosphere, either by the gases it evolves through its chimneys or by the liquids it discharges into the drains.

One of the numerous contradictions we found in Glasgow was, that while overcrowded to an extent which baffles description in the poorer quarters of the city, its fashionable and suburban districts are over-built to an extent which almost exceeds belief. At this moment there are upwards of 5,000 empty houses in Glasgow! This fact was apparent from the census of 1861; but we subjoin some figures, from which we derive more recent information. These are the numbers, according to the valuation roll of the city, made up to the 15th August, and published in the *Glasgow Herald* of November 11th, 1861.

*Empty Dwelling-houses:—*

| | |
|---|---|
| Under 10*l.* | 3,549 |
| 10*l.* and under 30*l.* | 1,105 |
| 30*l.* and under 60*l.* | 206 |
| 60*l.* and upwards | 57 |
| | 4,917 |

*Premises other than Dwelling-houses unlet.*

| | |
|---|---|
| Under 10*l.* | 373 |
| 10*l.* and under 30*l.* | 466 |
| 30*l.* and under 60*l.* | 176 |
| 60*l.* and upwards | 166 |
| | 1,181 |

Now it is very important that we should thoroughly understand the evils which proceed from this overbuilding. In the first place, it gives us a highly incorrect idea of the average number of inhabitants to each house, and hence an erroneous deduction with regard to the social progress of Glasgow. For example, while other cities in the kingdom show a proportion of at least five inhabitants to each house, Glasgow, by the census of 1861, shows a proportion of only 4·72. This ratio in all probability will now appear as 4·5. In fact it seems, *ex facie* of the statistics, that the overcrowding of the Gallowgate and Salt Market is balanced by the empty crescents and squares of Kelvin-grove and Govan. But no man in his senses will be prepared to maintain that the one evil counteracts the other. In the second place, the misdirection of capital is very great. We have been told that those empty houses represent a rental of at least 100,000*l.* per annum.

We had something more to say, but our present space is exhausted, and we must conclude. Although Glasgow has done much for her purification, yet more remains undone. Something must be attempted for the Kelvin: something must be done for the Clyde. Infants must not be permitted to die like lambs in a snow-storm. The "Irish element" must be more assimilated. The smoky chimneys must be improved. The day will doubtless arrive when we may expect a better condition of things; but as it stands this great commercial city affords matter for grievous reproach, and shows the slowness with which knowledge travels, the difficulty with which prejudices are overcome. The shadows are black in the city of St. Mungo.

## THE RESTORATION QUESTION WITH REFERENCE TO CATHEDRALS.

IN the paper read before the Institute of Architects* I took a small parish church as my supposed subject for restoration because, from their comparative obscurity, their less subjection to public opinion, and the smaller importance attached to their architectural features, these buildings are much more exposed to the caprices of those who have to deal with them than more magnificent structures such as our great cathedrals. It might also be supposed that I could have added that the nobler edifices are more uniformly in the hands of architects of known skill and good feeling: such, however, would hardly, perhaps, be borne out by fact; as some of them are, I believe, repaired without the intervention of any architect. The principles urged in the case of parish churches have a tenfold cogency when brought to bear upon cathedrals. Here we are dealing with the greatest productions of Mediæval art; and it would, clearly, be monstrous to treat them otherwise than as works whose value and the importance of their authenticity it is impossible to over-estimate. Up to the present generation this has been but little felt; and we consequently find that where the stone has greatly decayed,—as at Chester, Lichfield, Worcester, &c.,—the repairs have been carried out (up to within the last forty years) with scarcely any regard to the original design. More recently, however, this has not been the case, so far as intention at least goes; though the repairs having been often carried out by mere masons, details have been mistakenly executed, and minor alterations more deliberately made, which are, to say the least, exceedingly annoying; and what is more so, when such errors are pointed out to the guardians of the church by antiquarian societies, &c., the parties offering their suggestions are uniformly snubbed, and the error is defended as if a vital truth had been assailed.

What we have, however, most to fear, as regards our cathedrals, is *over-done restoration.*

The direction of the works has often been left practically in the hands of a single member of the chapter whose idea of restoration is the renewal of every decayed stone, and the chipping down the rest to correspond with it,—a process destructive both to the authenticity of the details (which cannot bear much resemblance to their original forms after having their surfaces reduced in all directions) and equally abhorrent to good taste, but which continues in many quarters to be held to be the right course to pursue. The proper course is, clearly, to renew only those stones which are absolutely perished to such a depth as to have entirely lost all trace of their old form; to insert in their places stones of the very same size and similar in every way; leaving the remainder untouched, though closing the joints carefully against the admission of wet. The patched appearance which this for a time gives is, to my eye, not unpleasing. It shows a building well cared for, but without any tampering or smartening up; and, if the building be of different dates, it leaves the evidences of its architectural history unobliterated; every stone which retains its form being left to speak for itself.

Imagine for one moment—by way of illustration—that unequalled "history in stone," the eastern half of Canterbury Cathedral, so admirably described and unfolded by Professor Willis, if the hand of undiscriminating restoration had passed over it. The works of Lanfranc, of Conrad, of William of Sens, and of the English William, whose intricate interminglings now form a history at once so perplexingly entangled and so charmingly *dis*entangled; and which together present the very best illustration existing in this country of the changes of architectural detail from the Conquest to the full establishment of Pointed architecture, and must ever form the very text-book of the architectural history of that period, as being at once the most perfect in its steps, the most completely chronicled, and the most admirably deciphered. Imagine, I would say, this treasury of art-history reduced to an unmeaning blank by the hand of the restorer,—either all indiscriminately renewed, or one half renewed and the other scraped over to look like it;—the coarsely axed work of the Early Norman mason, the finer hewing of his successor, and the delicate chiselling of the third period, all scraped down to the semblance of the new work by the same indiscriminating *drag*, or replaced by new masonry, uniting all periods into one, or else making a mimic copy of their distinguishing characteristics! I take an extreme imaginary illustration, because the work in question, as it remains in its authenticity, forming the most precious page of our architectural history, is so well known as to place the principle I am speaking of in a clearer light than if I took a less marked example; but if the mere suggestion of such Vandalism would call down public indignation, does not the same apply to cases of less general interest? and are we not equally bound to adhere to the true principles in cases of less notoriety?

I admit, however, that there do exist cases where the true principle cannot be carried out;—that is to say where, as at Chester Cathedral, the entire mass of the stonework has perished, and where the old forms can only be discovered by long and laborious search for little corners and nooks in which a mere fragment of the original remains. These are the exceptions which by no means invalidate the rule. It is a great misfortune that they exist, but they must be dealt with on their own merits, and not permitted to throw discredit upon the true principle for general application.

In such cases as those last named the right course seems to be, irrespectively of any question

* See pp. 22, 42, *ante*.

of undertaking the restoration, to get an architect of acknowledged judgment to undertake a perfect and long-continued investigation of the nearly lost details. Scaffoldings should from time to time be raised, to enable him to examine studiously and laboriously every part of the surface, and to recover the mouldings, and other nearly obliterated forms, wherever there is the smallest vestige of them to be traced; and every such vestige should, if possible, be indurated. By such a process the architect would, in the course of time, feel his way, little by little, to the original design; and, by laying down absolute measured drawings with minute descriptions of all he discovers and all which he is able fairly to infer from the evidence thus obtained, he may be able at last to make, with more or less of certainty, a restoration on paper of the lost and partially-recovered design which in any case would be most useful; but which, if a restoration *de facto* were at any future time determined on, would be absolutely invaluable; for, by that time perhaps, the actual evidences would have perished.

Not only are the repairers of our cathedrals a great deal too fond of renewing old details, but they are apt to forget the importance of preserving the old stones which have been replaced, as evidences (*pro* or *con*) of the truthfulness of the reproduction.

I saw recently at York a man lowering a carved and crocketted canopy from the Chapterhouse, which was to be replaced by a new one; and to my inquiry what they did with these original fragments, he replied, in his broad dialect, "We sell 'em, sir, for rockery." Even this ignominious fate is better than to sell them as building materials. I have indeed often seen most valuable architectural details preserved by being used in grottos and "rockery;" but surely it is not right to make over the carved work of the artists of olden time to our contractors as "superfluous materials." The right course (if indeed it is right to throw out such carved work at all, which I think is very seldom the case) is to have a kind of museum in the precincts of every cathedral (possibly in the triforium), where all authentic fragments of carving, and specimens, at least, of all replaced mouldings, &c., should be carefully conserved.

In speaking of cathedrals, there is one point I will mention which is somewhat pressing. It happens that the old arrangement of choirs is far from being well suited to present use. The choirs were intended for considerable ecclesiastical bodies (whether monastic or capitular); and congregational uses were secondary: with ourselves, the clerical bodies (especially the portions of them usually present) are small, and the congregational use is of primary moment. As, therefore, the choir is usually severed from the nave by a massive screen of stone, it follows that either the congregation must be crowded into the choir—which was not intended, nor is at all well suited, for their accommodation,—or the stone screen must be removed, and the nave opened out.

Either of these necessitates an interference with the old fittings, the one by the addition of seats, the other by the substitution of an open for a close screen, and the removal of the returned stalls.

My object in adverting to this is to press those who have to effect either of these alterations to do so with as much regard as is possible for the old work. I confess that when the ancient stone screen remains, I should always feel loath to meddle with it. However this may be, it is of the greatest importance to retain the old arrangement and the old fittings as far as we possibly can.

I take some blame to myself that at Ely, though I retained the old stalls in general, I did not re-use those of the bishop and dean, but substituted new ones of more ornate character. I think I was wrong, though the circumstances made it difficult to do otherwise.

In another instance, which I will not name, where there remained the old desk-ends of the fourteenth century of great beauty and interest (nearly the only ones of that age remaining in England), they were, only a few years back, removed, without any reason whatever, and the workmen allowed to appropriate them. I have a part of one now in my office, which was lent to me by one of the workmen, and a most valuable relic it is—the only one of its type in this country.

At another cathedral, now in course of rearrangement, where the chapter is one of ancient foundation—in which case its great officers were the dean, the precentor, the chancellor, and the treasurer—whose places were at the four corners of the choir; there remained the stalls of the fourteenth century, tallying in number with the ancient capitular body, which is still, in theory, kept up. It was the only instance I know of in which the stalls of *all* the four great officers were made larger and more dignified than the others; but, strange to say, while the other stalls have been preserved, and the true number kept up, it is said that all these four ancient official stalls are to be omitted; those for the dean and precentor being renewed on a design wholly different from the old ones, and those of the chancellor and treasurer assimilated to the stalls of the ordinary prebendaries.

I earnestly hope that this, which I feel sure must have arisen from inadvertency, may be reconsidered. I will only add, on this subject, that woodwork of an age anterior to the fifteenth century is so scarce and so valuable, that, whenever any relics of it remain, they should be most carefully and religiously preserved.

G. GILBERT SCOTT.

## THE ESSENTIALS OF A HEALTHY DWELLING.*

UNNECESSARY as it is for me to describe to you the component parts of the air; the process of its deterioration in passing through the lungs; or to dwell further upon those sources of impurity and other accessory influences in and about a dwelling which tend to vitiate the air within; it may be useful, before giving the results of my own observations on the means of obtaining efficient ventilation, that I should notice one important preliminary consideration,—that of the space required to keep a healthy man in full vigour,—on which very different opinions have been expressed. Experience gained in poorhouse dormitories, in prisons,† &c., had led to the conclusion that from 450 to 500 cubic feet are requisite, and that the ventilation should be such as will cause an entire renewal of the air about once in the hour. Observations made at the Model Lodging-house, in George-street, St. Giles's, which is a confined situation, satisfy me that the cubical space of 535 feet, which is provided in the dormitories of that building for each inmate, is, with proper ventilation, abundantly sufficient to render them healthy: such was proved to be the case, even when the cholera raged in the neighbourhood, and had not a single victim out of the 104 men who lodged within its walls. From this fact I think it reasonable to infer that the unhealthiness of the Wellington Barracks, Westminster, where the cubical space per man allowed in the dormitories is stated to be 500 feet, must have arisen, not from want of space, but from some other existing evils, particularly the defective ventilation, pointed out in the report made to the General Board of Health by the Commission on Warming and Ventilation.

As mistakes with regard to space tend to create imaginary difficulties, and either impede sanitary reform, or cause a serious unnecessary expenditure,‡ I think it of use to notice two recent errors on this point which have come under my observation,—one in the *Quarterly Review;* where, in an article on "Labourer's Homes," it is stated that "The Lodging-house Act requires an allowance of 700 cubic feet per person;" another, in a publication by Dr. Druitt, entitled "The Health of the Parish," where it is said that "It has been decided at Bow-street that every inmate of a family ought to have 400 cubic feet of space." On inquiring at Bow-street as to the latter decision, I learned that the magistrates have no power to determine the space, and was referred to the Assistant Commissioner of Police, who informed me "that 30 feet superficial is the space allowed to each lodger in the metropolitan common lodging-houses; the rooms averaging 8 feet high, which is equal to 240 feet cube; and that 50 feet superficial is allowed to each police-constable lodged in a station or section-house; the rooms on an average being 9 feet high," which is equal to 450 cubic feet. The Poor-Law Board, without laying down any fixed rule, applicable to all circumstances, adopts as a basis of calculation an allowance of 500 cubic feet for every person in sick wards,* and 300 cubic feet for every healthy person in the dormitories.

Dwellings for all classes of persons, in order to their being healthy, should be so constructed as that they will be everywhere accessible to pure air, and be free from stagnation in any part; and, whilst it is obvious that the state of the surrounding air must have much influence on that within the dwelling, the renewal of the latter should always be sought from the purest source, instead of the supply being drawn, as it often is, from a low damp situation or a confined internal court.

Considered practically, the main question with regard to ventilation is, in what way the air which has become vitiated can be renewed with a supply of pure fresh air without the creation of a draught injurious to health. To do this, the air must enter copiously, but almost imperceptibly; and, when used or become vitiated, its exit should be both continuous and complete. Ventilation is of two kinds,—natural and artificial; the former being effected by means of windows and doors, with the crevices round them, as well as by chimneys and fireplaces, which are important agents in natural ventilation, and may also, by scientific arrangements, be made conducive to an efficient system of artificial ventilation peculiarly applicable to dwelling-houses.

In new buildings improvements may be easily adopted which are not always applicable to old buildings; but, as far as circumstances allow, they should be carried out, from a settled conviction that pure air is indispensable to a healthy state, both of body and mind.

Windows properly constructed, made to open at the top as well as below, and suitably placed, afford the most ready means for the natural ventilation of dwellings; besides which are the various contrivances of louvrets of perforated glass, zinc, tin, &c.

Chimneys act as ventilators whenever a fire is lighted in a room: the lower stratum of air being immediately set in movement, a current of air is established from the crevices round the doors and windows, or from any other openings, towards the chimney, whereby much of the vitiated air is carried off. This process of ventilation takes place in a slight degree when there is no fire in the chimney; and, therefore, bed-rooms are much more healthy with a chimney than without. It should not, however, be forgotten that a large portion of the vitiated air ascends above the chimney opening; and, therefore, it is essential that a provision be made for its removal thence whenever perfect ventilation is desired.

An independent supply of fresh air may be introduced into most rooms which have a fireplace, by conveying it through a pipe or channel formed under the floor or in the wall to an air-chamber constructed at the back or sides of the stove, in order that it should be there warmed before entering the room. I have seen in Edinburgh a solid fire-clay bed-room chimney-piece and grate formed so as to leave, when it is set, a cavity round it, which appears well adapted for this purpose. The same or a separate pipe or channel may also be used for feeding the fire with air, independent of that in the room; for this purpose, it should pass out at the cheeks of the stove, rather than beneath the grate, which is liable to cause a diffusion of dust in the room. Such a supply of air tends to render chimney ventilating valves more certain in their action than they often are, owing generally to an insufficient draught in the chimney, which causes the emission of smoke into the room. These valves would be invaluable for the discharge of vitiated air, which is their intended purpose, were it not for this occasional ingress of smoke. The most effective means of avoiding that evil is the carrying up an independent flue in close contact with a smoke flue constantly in use, as that from the

* By Mr. Henry Roberts, F.S.A. See p. 56, *ante*.

† The space allowed in the cells of prisons should not be regarded as an absolute criterion; at the Model Prison, Pentonville, there are about 800 cubic feet.

‡ The Report of the Government Commissioners on Warming and Ventilation says at folio 99:—"Under all the circumstances we would urgently direct the attention of the Minister at War and the Horse Guards to the *absolute necessity* of providing more room and accommodation for the soldier in barracks; and that instead of 500 cubic feet of space, 700 to 800 cubic feet should be allowed per man; or, as in the case of the Wellington Barracks, that only ten persons should occupy the space allotted to sixteen; and that these regulations should be enforced as soon as extra spaces can be provided throughout the whole of the United Kingdom." In a previous part of the report, at folio 92, are found the following apposite remarks, which scarcely appear to have emanated from the same mind:—"The continuous removal of impure air, as it arises, is of very much greater importance than the cubical contents of air in a room." In the soldiers' rooms, which are constantly occupied, the amount of cubical space can be of very little importance; for, how lofty soever the rooms may be, unless the heated and impure air can pass away, the space will soon be occupied by air unfit for respiration, and the greater or the less size of the room will only resolve itself into a little more or a little less time before the air is brought into an impure condition." "The soldiers' rooms are about 12 feet in height: with good ventilation this might be reduced to 11 feet or even 10 feet without disadvantage.

* In order that the amount of space now deemed requisite in hospitals may be readily compared with the above, I quote the following:—"In solid-built hospitals the progress of the cases will betray any curtailment of space much below 1,500 cubic feet. In Paris, 1,700, and in London 2,000, and even 2,500 cubic feet are now thought advisable."—Miss Nightingale's "Notes on the Sanitary Condition of Hospitals."

kitchen: the air within the ventilating flue is by this means rarefied, and the action of the valve rendered more efficient. Tubular flues, of pottery, made double for this express purpose, are found to answer well, and have the advantage of occupying but little space, whilst they are not liable to the objection pointed out to me many years since by an eminent builder, who had found that cast-iron flue-linings, having no mortar joints, acted as a dead shore in the wall. In cases where the chimney-valve, being fixed in the flue, causes an ingress of smoke, the most effectual remedy is, I believe, Dr. Arnott's smokeless grate, with the draught duly regulated by a contraction of the vacant space over the fire. These grates economise fuel considerably.

Ordinary grates, I may here remark, are alike wasteful of heat and fuel, both of which would be much economised by the substitution of a stove projecting slightly into the room, and combining the chief advantages of the one known as Dr. Arnott's ventilating stove with the cheerful open fireplace. I have seen some such stoves in use on the Continent; and I believe that the only valid reason against their adoption in England, beyond the force of custom, is the difficulty—not, however, an insurmountable one—of applying them to fireplaces with the ornamental chimney-pieces in such general use. One of the most useful modern improvements in grates is that of forming the back and linings with fire-brick instead of iron.

The intimate connection between warming and ventilation has led to a digression, in returning from which I remark that, in order to render natural ventilation effectual, the openings required for the escape of vitiated air should be placed either in the ceiling or near to it.* How far the admission of fresh air also in the upper part of the room be objectionable on the ground that the air vitiated by breathing, which ascends in consequence of its relative lightness, is in that case only diluted, and not entirely replaced by pure air, remains, I believe, yet to be determined by properly-conducted experiments.

With all the various contrivances and arrangements proposed for the admission of fresh and the exit of vitiated air, unaided by those appliances which are scarcely consistent with the term natural ventilation, none have come under my observation which secure uniform action, and fully guarantee that the distinct provision made for the exit of vitiated air shall not become the medium for the ingress of cold air on a change of temperature in the apartment, the frequent consequence of which is a draught more or less perceptible. In order to avoid this evil, various means have been adopted, according to circumstances, with varying success. The use made of chimney-shafts for this purpose has been already noticed. Tubes or shafts of wood, of clay, or of metal, are also available, provided a constant outward current is maintained by such an application of heat as will sufficiently rarefy the air. Hot water has been and may often be applied externally for this purpose with advantage. I have used gas inclosed within an upright shaft partly of wood; the light being placed behind a square of glass, and the air entering through perforated zinc, with a hopper inclosure. By these means the combined benefit of light and ventilation are obtained from the same quarter. In many situations this simple plan might be easily adopted; and in dwelling-houses generally I believe that gas might frequently be rendered a valuable contribution to ventilation, instead of being injurious to health. As a sunlight, with a double tube, it has been so employed with success.

The utilization of heat from stove fires, from hot water, or from gas in ordinary use about a house, is apparently so natural and easy a means of obtaining a motive power to assist in the ventilation of dwelling-houses, that I have noticed them under the head of *natural*, rather than of *artificial* ventilation, to which I must now refer.

*Artificial ventilation* is ordinarily effected by the action of valves, fans, pumps, screws, furnaces, stoves, or other artificial heat, and a variety of contrivances, whereby air is either drawn out or forced into an apartment. In the one case, the space occupied by the vitiated air, which is withdrawn, is replaced by an admission of pure fresh air; and in the other the pure air forced into the apartment causes a displacement of the vitiated air, for the escape of which due provision must be made. In both cases a just proportion between the volume of air which ought to enter and that which should be expelled is necessary; and in order that the fresh air may be adapted for use at all seasons of the year, means must be provided for warming it prior to its distribution in the apartment. The best means for effecting this is, I believe, by bringing it into contact with heated fire-brick, suitably arranged in stoves or furnaces. When heated iron is used for this purpose, the air is liable to be deteriorated, or, as is commonly said, burnt. Hot-water, which is similarly employed, has not this injurious effect.

Nothing can be more inconsistent with a healthy system of warming than those arrangements which provide only for raising the temperature of the air already in the apartment, vitiated as it may be. Such is mostly the case when the German hot-air stove is used, and also when hot-water is circulated in pipes through the apartments; but either may be employed with impunity as an auxiliary to an open fire.

Whether suction or propulsion be preferable as a motive power, for effecting the change of air in ventilation, is a question which has been much discussed here, as well as in Paris and Brussels. After examining both systems in their practical application, the latter appears to me decidedly preferable; excepting in peculiar cases, when the power of suction may be more readily applied.

When fresh air is forced into an apartment, through suitably-placed openings, it becomes more generally diffused than it does when its entrance is dependent on the withdrawal of the vitiated air by means of suction, the tendency of which is to draw the fresh air towards the point of exit, instead of leaving it to disperse and circulate freely. Suction involves the further disadvantage of setting in movement whatever noxious vapours may be within its reach.

Whilst artificial ventilation is mainly applicable to public buildings, to manufactories, and to dwelling-houses of considerable magnitude, its principles may often be adopted in numerous instances occurring in an architect's practice.

For this reason, as well as on account of the great influence which ventilation exercises on health, more has been said on this branch of my subject than some may consider necessary. I cannot, however, quit it without expressing a regret that the science of ventilation* has not been more thoroughly mastered, and its practical application more simplified than it would seem to be from the Report of the Government Commissioners on Warming and Ventilation, known doubtless to many of you; and which, with its mass of practical information, appears to me to have failed in placing the subject in that clear light which was contemplated on the suggestions made by Dr. N. Arnott, in 1849, for an investigation by "a committee of eminent scientific men, comprising chemists, engineers, and physicians."

3. Having considered those circumstances in regard to a healthy dwelling which appertain to the locality, and those which are structural, it remains for me to notice very briefly "those which depend mainly, though not wholly, on the occupants themselves,—external and internal cleanliness, and a proper use of structural arrangements.

The most suitable provision for rendering a dwelling dry, or for its efficient ventilation, will not secure the health of the occupants, if there be either around or within the abode an accumulation of dirt, whether in a solid or in a liquid state. Houses may, to all appearance, be very desirable dwellings; but, if the drainage be out of order, or there are cesspools within their precincts, or untrapped and foul sinks, there is no safety for the inmates. Nor can the close proximity of stables be a matter of such indifference as might be supposed, from the practice so prevalent in the most wealthy parts of the metropolis; for one inevitable consequence is that in the summer many windows which should be opened for ventilation remain closed, in order to exclude the noxious fumes of the dung-heaps.

Neglect of sanitary laws is as much manifested in the country as it is in towns, and on the Continent not less than it is in England. It would be easy to point to spots where the air is unrivalled for purity, and the scenery around of surpassing beauty; and yet such are the accumulations about the dwellings that it is often difficult to enter the doors without wading through a stream of filth, alike offensive to the sight and to the smell. Can it be a matter of surprise if such violations of the known laws by which God regulates the health of his creatures, be visited with sickness and premature death? With equal certainty as to the issue, we may predict that those who live in close proximity to black and stagnant pools, to foul ditches, or to sluggish open drains, will periodically suffer from fever or dysentery; as we do that the house in flames will be consumed, if the destructive element be not extinguished; or that the neglected garden will be overrun with weeds and become a wilderness.

Internal cleanliness in the houses of the wealthy, and all that as matters of daily routine are connected therewith, including proper attention to the sinks and traps, as well as the ventilation generally, is, in the main, left to the care of servants;* and often through their ignorance, rather than their culpable neglect, the health of the family, and especially that of the younger children, is very seriously injured, without the slightest apprehension as to the cause. Many instances might be cited in proof of a fact which is calculated to arouse even the most self-indulgent, and to induce them to co-operate in such a diffusion of sanitary knowledge as will alone insure, that which is dependent on the occupants themselves, a proper use of the structural arrangements essential to a healthy dwelling. The middle classes would contribute less grudgingly than they now often do, towards the cost of public sanitary improvements, and would even urge their extension, if they were better acquainted with the laws of health; whilst a practical knowledge of such of them as relate to indoor life, whether it be that of the dwelling-house, the manufactory, or the workshop, would lead them duly to appreciate the advantages of cleanliness and good ventilation, and to see that their benefits were extended more generally to those hives of human industry where numbers of working people congregate for many successive hours, partly by gaslight.

If the want of knowledge and forethought debar many in the upper and middle walks of life the full enjoyment of a healthy dwelling, how much more is it the case in regard to the labouring population, most of whom are under the further disadvantage of having scarcely any choice as to the external circumstances of their dwellings, and often but little as to the internal accommodation? The difficulties arising therefrom with which working people have to contend, in most thickly-populated towns, are well known to be very great. I shall not dwell upon them here, nor attempt to point out the degree in which they are increased by habits of intemperance—the most fruitful cause as well as consequence of domiciliary wretchedness. Such a calculation as would show the probable amount expended by the working population in the metropolis and its suburbs in the 10,200 houses open for the retail sale of intoxicating liquors would be instructive, both as to one fruitful cause of the evil, and also as to legislative measures of an indirect character needed for its removal.†

---

## NON-ABSORBENT MATERIALS IN CONSTRUCTION.

### HEALTHY DWELLINGS.

I HAVE perused with great interest the paper read by Mr. H. Roberts at the last meeting of the Institute of Architects, "On the Essentials of a Healthy Dwelling," and the discussion which followed. The efforts now put forth in the cause of sanitary reform cannot be too highly appreciated; but it is of the utmost importance that every step should be in the right direction, otherwise mischief may be the result, notwithstanding the best intentions.

It seems to have been assumed in the discussion that walls to be dry and warm should be constructed of non-absorbent or non-porous material. Mr. Roberts, in his paper, and Mr. Chadwick, in his remarks, particularly insisted on this. The latter gentleman observed that "he had repeatedly suggested the importance of using non-absorbent bricks in the construction of the dwellings of the poor; as every ounce of moisture got rid of

* In a certain description of common rooms ventilation may be effected by means of wooden tubes perforated with holes, or having chinks at the angles: in some cases they may be carried across the ceilings, and in others be fixed at the angles: they have also been used for admitting fresh as well as for the exit of vitiated air. These tubes distribute the air more generally, and are not so likely to be closed as either Sherringham's or Hart's ventilators, both of which are very useful in many situations. A cheap cottage ventilator may be made with a triangular piece of zinc fixed in an upper angle of a window, and perforated in the centre, with a projecting rim formed round the perforated part, in order to receive a moveable cover, which may be hinged.

* A simple test, whereby the deterioration of the air could be readily ascertained, is a great desideratum.

* The recent publication in a cheap form of Miss Nightingale's highly practical Notes on Nursing affords the means of conveying many valuable lessons on this subject to domestic servants. I have endeavoured to give some practical instruction in a lecture entitled, "Home Reform; or what the Working Classes may do to Improve their own Dwellings."

† To be continued.

contributed to make the dwelling more healthy." The object and purpose I cordially agree with, but my experience in the use of materials does not lead me to the same conclusion as to the means. On the contrary, I venture to assert that no material can be dry and warm that is not to a certain extent porous and absorbent. A building properly roofed in may be damp from two causes. The sub-soil may be humid and the walls porous and thin, in which case the moisture will rise from the floor and will penetrate the walls by capillary attraction; or the damp may arise from condensation of the moisture in the atmosphere on the inner face of the walls and floor. In the first case the remedy is simple and easy; by using a sound hard brick for the walls, and making them sufficiently thick, and for the floors by laying underneath a non-absorbent material. The second cause of internal moisture is much more difficult to deal with, and will be found to exist just in proportion to the use of non-absorbent materials in the walls. There is no building material, except glass and metal, so non-absorbent as slate; yet a house built with slate is known to be cold and damp. I resided in one in Wales for some time, and a more chill and comfortless habitation I never experienced. Again, wood we know is much more absorbent than either brick or stone; yet a wooden house is proverbially warm and comfortable. A wall of three-inch plank, well jointed, is more effectual in keeping in the warmth than a fourteen-inch brick wall. A little consideration will make this plain and intelligible. All substances conduct heat just in proportion to their density or specific gravity. The same principle will apply generally to their power of absorption inversely as the density. The effect, then, is this: a wall built with non-absorbent material rapidly rises and falls in its temperature. The air inside a house being usually warmer than that outside, has a greater capacity for moisture. As the wall conducts away the warmth, the temperature falls, and the superabundant moisture condenses at the dew point on the face of the wall. Where the material is absorbent the conducting power is much slower; and, if any condensation takes place, it is to a great extent absorbed, to be again abstracted as the temperature of the apartment rises.

I am not pleading for imperfect material; but I believe it to be impossible to make a nine-inch brick wall perfectly dry, whatever may be the quality of the bricks. If porous, the wall will be pervious to damp; and if non-absorbent, the moisture will be deposited on the inside on every sudden fall of temperature. A fourteen-inch wall of hard sound bricks, partially vitrified, will protect from damp both from without and within, under all ordinary circumstances. A case lately occurred in the course of my practice, which will illustrate the above remarks.

A vault was constructed, in connection with a banking establishment, made of strong iron plates, rivetted together and surrounded by brickwork. This vault was accessible from the large room of the bank by a short flight of steps, the air during the day circulating freely from one to the other. Iron being a non-absorbent material, the vault might have been expected to be perfectly dry. On the contrary, it was found that papers deposited in it became saturated with moisture; whilst, in the room above, they were quite dry. The fact was, the warm air coming in contact with the iron walls, which rapidly conducted away the heat, was lowered in temperature, and discharged its humidity. The remedy applied was simply a small heating apparatus to keep up the warmth, which has completely answered its purpose.

I cannot help thinking there must be some mistake in Mr. Chadwick's statement that a wall constructed with hard-burnt bricks, 9 inches by 18 inches, could be built at a cost of two-thirds or three-fourths of that of an ordinary 9-inch wall. The cost of moulding bricks four times the ordinary size must be much greater, and the weight being so much heavier, the setting must cost more in proportion, whilst the mortar would be the same, or nearly so.

J. A. PICTON.

## PROFESSOR SMIRKE'S LECTURES ON ARCHITECTURE AT THE ROYAL ACADEMY.

### LECTURE II.

DR. MOORE tells us, somewhere, of his having met on his continental travels with a Scotch tourist who was delighted with the mountain scenery of Italy, and was expressing his admiration of one of the sub-Alpine lakes, when he was rebuked by the doctor, who assured him that there were some scenes of similar character in Scotland of not inferior beauty and sublimity; and specified one as particularly worthy of his admiration, which turned out to be part of the Scotch laird's own paternal estate. He had, in fact, been born in the midst of natural beauties, so familiar, or so lightly regarded by him, that they had escaped his recollection, or, perhaps, even his notice. A similar indifference is apt to be felt by us towards all objects that are too easily accessible. In such cases familiarity breeds contempt, whilst we are wont to show and to feel unusual zeal and animation when the object of our research is remote, or accompanied in its attainment by the stimulus of difficulty.

Thus it is that we live surrounded by stores of knowledge, of which we rarely avail ourselves; museums which we seldom visit, and libraries which we never consult. Many such neglected mines of knowledge exist in London: many a rich vein is daily trodden, as it were, under our very feet, without tempting us to extract from it the treasure it contains.

I purpose on this occasion to invite your attention to one of the greatest of these depositories of intellectual wealth,—the Library of the British Museum.

Without attempting to bring before you even the shortest or most meagre enumeration of all the objects of interest to the architectural student which that vast repository may contain (such an enumeration would, indeed, be as much beyond my powers as it would certainly be beyond the narrow limits of a lecture),—without attempting any such task, I propose now to indicate to you a few of the more striking specimens of the literary and artistic wealth which are in so great abundance in the library of the British Museum, at our disposal; accompanying them with such remarks as may be naturally suggested by the consideration of the objects themselves, as I enumerate them. I do not design here to touch upon the antiquities at the British Museum: a critical examination of these, or even a correct appreciation of them, would be beside my purposes as well as beyond my powers. To enter that department would assuredly lead us into antiquarian disquisitions, which I am anxious to avoid, as being foreign to my duties within these walls.

The first book I shall advert to is a very large folio volume, descriptive of the great Flavian amphitheatre in Rome; and appears to have been the result of long and careful examinations, made chiefly during the excavations by the French whilst in military occupation of Rome in 1811, 1812, and 1813. The author was a French architect, Mons. Paris, who had long been a resident in that city, having quitted his native country at the outbreak of the great Revolution. He seems to have been a painstaking and intelligent observer; and the delicately-executed drawings of which this volume consists, with the very minute notes explanatory of them, bear testimony to his great carefulness as an architectural draughtsman. He appears to have quitted the practice of his profession as an architect early, and to have been engaged for some years in the decorations of the royal theatres and of the opera, at Paris. During his subsequent exile in Italy those studies were made, one of the fruits of which was the magnificent volume I have alluded to.

Probably there never was executed so complete a monogram of any one building. The only subject of regret is that the drawings generally do not distinguish so clearly as one would wish between those parts which are the representations of the actually surviving portions of the building and those parts which are the conjectural restorations of the ingenious antiquary himself. Some of the drawings, however, are not open to this criticism, but are beautifully-executed delineations of the edifice in its revived state; and I can safely affirm that all the drawings bear very strong marks of having been the work of a painstaking and scrupulous artist. The work was intended and fully prepared for publication: it has remained, however, in MS., and ultimately became by purchase the property of the Trustees of the British Museum in 1847.

In many respects the Colosseum at Rome is one of the remarkable buildings of antiquity. It has all the attributes of grandeur. In its actual dimensions, I believe it to be the largest single building ever erected; unless we except the Pyramids of Egypt, which are, perhaps, hardly to be classed as works of regular architecture. Its simplicity of character and unity of design are also sources of grandeur. There is a breadth of manner, and a noble abstinence from trivial ornamentation in its external architecture, which greatly elevate the character of the building. There is a majesty, even, in its stupendous strength. It stands a monument of consummate constructive talent; a talent not parading itself, like a Mediæval cathedral, by the perpetual manifestation of great efforts;—lateral thrusts, and counterbalancing weights; huge picturesque masses of masonry piled up solely to resist the tendency to self-destruction constantly operating on the structure. This immense building, on the contrary, stands, and has stood for eighteen centuries, not by any straining exertion, but simply because all the laws of static science have been scrupulously regarded. I am justified in saying that it has stood for eighteen centuries; because, notwithstanding the concussions of earthquakes and tempests, and the erosive agency of natural causes, it still stands with few marks of substantial injury, except those which it has received from the destructive hands of man.

It has been for ages the quarry whence ready-worked stones have been continually abstracted, and whole palaces have been the result of such spoliation. Yet it survives, next after the Pyramids, the greatest architectural monument in the world.—

> "A ruin, yet what a ruin! From its mass
> Walls, palaces, half cities, have been reared;
> Yet oft the enormous skeleton ye pass,
> And marvel where the spoil could have appeared."

I must not dwell much on the structural merits of the building; but I cannot refrain from expressing my persuasion that the very ablest practical mason of the present day might study with great profit the jointing, bonding, and bedding of this mass of masonry; while the brickwork is equally admirable;—the dexterous economy of labour by which rubble-work, consisting of broken fragments of stone embedded in Pozzolana cement, is strengthened by an artful introduction of bonding courses of brick; these bricks being often of very considerable size, and always of excessive hardness. All this union of economy of labour with the utmost strength is indeed well calculated to excite the admiration of every practical eye; yet this wise economy of labour and materials, which is apparent throughout, was never allowed to interfere with that stability of workmanship which was evidently a paramount consideration with the builders. The three-quarter columns, for example, of which there are on the exterior so great a multitude, are not built as insulated blocks of stone applied to the surface of the wall for the mere sake of ornament; but are built in and bonded with the general masonry of the walls; contributing, therefore, to their strength quite as much as to their embellishment; in fact, the very reverse of what was very commonly the case with the slender shafts of Mediæval architecture, which were often inserted to give lightness and richness of effect to the pier against which they stand; serving, it is true, to convey to the mind's eye the idea of support to the corresponding members of the archivolts, and continue down their lines; but not practically forming any real integral part of the pier or jamb against which they stand. That this was, at all events, often the case, is obvious from the fact that there are few Mediæval buildings that have not been more or less deprived, either by natural decay or by violence, of their slender nook-shafts; the arch moulding which was made apparently to rest on them remaining, nevertheless, perfectly unaffected by the removal of them.

It must be remembered that in their working the column as an integral part of the wall behind it, as is, I believe, invariably done at the Colosseum, a considerable amount of extra labour and some loss of material were incurred by thus sinking the circular shaft out of the solid block,—a labour and waste, however, which appear never to have been heeded when the perfect stability of the work was in question. These columns, thus constructed, act strictly and effectively as buttresses, giving great lateral support, while they so largely contribute to the ornamentation of the structure.

In like manner we see the vast blocks of stone forming the entablatures tailed into and bonding with the rest of the masonry;—not merely laid upon the pillars to convey the idea of construction, but really forming an essential part of the wall masonry.

It is, indeed, very manifest that extreme durability was ever a foremost consideration in the mind of those able Roman masons. A curious instance of this feeling occurs in the construction of the steps of the numerous public staircases. Being open, and therefore constantly exposed to the weather, it is obvious that had the steps been simply laid on each other in the usual way nowadays, the wet would have been liable to penetrate or be driven through the joints; and so, in the course of years, the gradual but constant penetra-

tion of wet would have injuriously affected the vaults and arches beneath on which these steps were laid. To prevent this a very ingenious and, I should imagine, a very effectual contrivance was devised, consisting of a sinking cut into the face of the tread where the riser of the step beds upon the tread of the step beneath it; which sinking, as Mr. Paris very satisfactorily shows, was made to receive a covering, or what workmen call a listing, of mastic or cement of some kind, well calculated effectually to exclude wet.

I must, however, no longer dwell on these practical subjects, which might be multiplied to almost any extent; all tending to prove that there were master-minds among the builders of Rome as well as among its military and political chiefs. Although this wonderful building now presents to our view little more than a vast mass of bare masonry and brickwork, deformed by time and by barbaric depredations, it is not to be doubted that its internal embellishment was as gorgeous as might be expected from Roman builders who were so addicted to magnificence, and who might be supposed to be especially lavish in the adornment of this, the most highly favoured centre of attraction to the pleasure-loving citizens of Rome. Mr. Paris furnishes us with careful drawings of fragments of ornamental details which fully confirm this supposition: minutely enriched stucco linings appear to have decorated the interior of the halls and corridors; and notwithstanding the ravages that these ruins have for ages been subjected to in the search for precious marbles, fragments of fluted columns yet survive, of richly-coloured marbles, carved most elaborately. The extent to which this elaboration was carried may be in some measure inferred from the immense amount of labour bestowed upon so subordinate a detail as the fluting of the shafts of the marble pillars.

It should, however, be observed, in justice to the architects of the Colosseum, that the somewhat excessive extent of minute decoration, as indicated by the few surviving specimens, is confined to the interior; whereas the exterior, both in the constructive features and in the details, is remarkable for general simplicity.

In this building, as in most of the Roman monuments of the best period, a greatness of manner eminently distinguishes its exterior architecture; a circumstance well worthy of your note in the proneness to crowded ornamentation at the present day so prevalent. Without going back to remoter and simpler times, we shall, indeed, find that in Roman art, in its best and purest days, and in Mediæval art at the justly-applauded epoch of the thirteenth century, and in Renascent art at its period of freshness and beauty, when Bramante and Raffaelle designed,—at all these epochs of art we shall find no vulgar overloaded decoration, but abundant evidence of that just appreciation of the value of ornament which knows how to use it with due effect, and when it may be usefully dispensed with.

I will not dismiss this remarkable volume from your notice without noting the extraordinary dimensions of the building which it illustrates. I find the length of the major axis to be 580 feet, and of its minor axis, 480 feet; whilst the height from the ground-line outside the building to the summit of the exterior wall is 160 feet. Mr. Paris makes an elaborate calculation of the actual number of sittings afforded by its marble benches: the result is 44,090 persons. The stories, therefore, of those (like Fontana and others) who represent the number of persons accommodated to have been 80,000, or even more, were either wild exaggerations; or it may be that this high number might have been obtained by counting the multitudes who could have been crowded into the numerous corridors, on the broad platform at the highest part of the amphitheatre, and possibly, too, on the arena itself.

I will now invite your attention to two splendid folio volumes of drawings preserved in the Royal Library, of which they form a part. The drawings are executed very carefully and cleverly in outline, slightly shadowed and tinted, upon vellum. The series comprises plans and views of the chief royal palaces of France, together with some original designs, by Jacques Androuet du Cerceau, one of the most eminent among the originators of the Renaissance in France, born about 1515.

These valuable and interesting drawings were made for Catherine de Medicis, and certainly formed part of the Royal Collection of France. How they subsequently became transferred to their present place on the shelves of our great public library is not recorded.

It is not my intention to particularize all the buildings represented in these volumes; indeed, so rich was the French crown in Châteaux and Maisons de Plaisance in the sixteenth and seventeenth centuries, that it would extend my notice far beyond its proper limits were I to do so. All the earlier examples are characteristic of the transitional period when they were erected. In plan they retain much of the type of a Mediæval fortification; and this may have been probably occasioned in some cases by the erection of the palaces on the foundations of some more ancient castles of a strictly military character. But there are few that retain any provisions whatever for active defence: the bastions become clusters of embowed windows, enriched with many architectural embellishments; and the intervening curtains are occupied entirely by wide windows, lofty chimneys, and other features of domestic architecture, to the exclusion of the loopholes and frowning machicolations of the preceding ages. Those highly-picturesque buildings, the Château de Chambourg and that of St. Germain au Laye, for example, are buildings of this mixed character. They are described as Bâtiments de Plaisance, and present throughout the evidence of their having been built for agreeable residences; whilst, on the contrary, the plan alone of these buildings would convey the idea of a strictly fortified place, with moat and drawbridge, and like appendages.

The Châteaux of Blois and of Amboise are interesting examples of this picturesque transitional style; one of the prominent features of which is the very steep and conical roof, enriched by most elaborate cresting and finials; the latter rising often to a considerable height, sometimes of metal, and sometimes executed in glazed and coloured terra-cotta.

The variety imparted by these means to the sky-lines of the roofs is one of the chief sources of the picturesque in the buildings of this date in the north of Europe. It is worthy of note that at the Château Amboise, the chapel, which is conspicuous in the group of domestic buildings which compose the château, is strictly Gothic in general outline as well as in its details; having lofty and slender pinnacles and buttresses, and traceried windows; whilst, as I have stated, every other part of the palace is in that particular phase of the Renaissance which prevailed in France after the general discontinuance of the Gothic manner. This distinction would seem to indicate that a sense was felt of the propriety of adopting for ecclesiastical buildings a character of architecture differing from that employed in designing domestic buildings.

I have on a former occasion expressed my opinion that such a distinction seems not unfounded in reason and good sense. To adopt a strictly Mediæval style of design in all its purity and completeness in the erection of a domestic building—a private residence, for example, where all the luxurious requirements and refinements of modern social life are necessarily to be expected—is a task full of embarrassment and difficulty to the architect; necessitating frequent departure from ancient types; whilst, on the other hand, the Mediæval style lends itself with great facility to the construction of a church or chapel in its familiar form, and with its necessary adjuncts.

There seems, indeed, a moral as well as æsthetic propriety in thus setting apart a special style to buildings of a sacred character; visibly distinguishing it from a building erected for domestic and, as it were, vulgar uses;—a distinction analagous to that which led the Egyptians to preserve a hieratic character in their sacred writings, as well as in their sacred architecture, long after classic forms and demotic alphabets had become familiar to them. I may add, with reference to this example at Amboise, that there are no indications whatever to justify a supposition that this Gothic chapel is not coeval with the surrounding buildings of the château; which are, as I have said, of a perfectly Renascent aspect.

The Château Valeri, which is in the same early French style, is particularly notable for the boldness and vigour with which it is designed—a manner so broad and forcible as to well merit the character of grandeur.

The Château de Montargis is an example of great interest, having less of the Renaissance element in its style of architecture. The sectional views convey an excellent idea of the interior of the château as it appeared at the time of Catherine de Medicis. The capacious chimney-breast in the great hall is especially observable, as characteristic of the style of the period. On the front of this chimney-breast is represented, in sculptural relief, the romantic story, which tradition has handed down, of the faithful "Dog of Montargis," who avenged the death of his master: to quote the somewhat quaint old French phraseology in which the volume adverts to the legend, it describes the subject of the sculpture as "L'histoire digne de mémoire d'un combat d'un gentilhomme contre un chien, lequel gentilhomme, étant vaincre par le chien, confess a avoir tué son compagnon, mâitre du celluy chien."

This practice of sculpturing or painting some family legend, or other interesting historical incident, over the huge chimneypiece round which the members and retainers of a family were habitually assembled, seems agreeably characteristic of the habits of the time; and presents a contrast very unfavourable to the manners, and even to the taste, of the present day, when we compare these simple, and perhaps somewhat rude, yet vigorously-expressed illustrations of our social state, with the paltry ornamentation of a modern parlour, shabby, unmeaning looking-glass and putty frame which usually usurp this place of honour in the best living-room of our modern dwelling-houses. The chimneypieces or fireplaces themselves suggest similar observations. In the case before us of the great hall of the Château Montargis, the chimneypiece, as represented in this book, is typical of that feature in all the great halls of the fifteenth, sixteenth, and seventeenth centuries, throughout Europe. A great canopy or hood advances forward, overhanging a hearth capacious enough for the combustion of fuel sufficient to warm the whole household collectively. This overhanging chimney-breast is not usually carried by the projecting piers of solid masonry or brickwork which nowadays generally limit greatly the radiation of heat, and send it up the chimney rather than into the room. The breast, on the contrary, is usually carried by pillars, or other carved supports, attached to the wall, and ornamenting as well as supporting the hood which is to carry off the smoke; at the same time projecting so moderately, and occupying comparatively so small a space, as to cause very little obstruction to the radiation of warmth.

No doubt these rude contrivances may not be always very effectual in carrying off the smoke; but it may well be questioned whether a little smoke was not more than compensated for by the genial embrace which these old fireplaces offered to the old social circle. Besides, let us candidly admit, with all the unsociable contractions which modern science has engendered, are we not still occasionally a little troubled by smoke?—smoke, without any compensating beauty, and for which we get nothing in return but damaged furniture and, perchance, a ruffled temper.*

## THE SANITARY STATE OF WINDSOR CASTLE.

WE are glad to learn that, Sir James Clarke having suggested to the chief commissioner "that a searching examination be made into the sewerage, drainage, and general sanitary condition of Windsor Castle and its suburbs," Mr. Robert Rawlinson, of the Local Government Act Office, has been requested, in conjunction with Mr. Starey, of the Office of Works, and Mr. John Turnbull, clerk of works at the castle, to examine as to the sanitary state of the castle, with a view to making such improvements as may be found necessary, and to report on the same as soon as practicable.

We learn that the sewerage and drainage of the castle underwent complete revision and reconstruction some ten or twelve years ago. Every old sewer and cesspool had been removed, even to the tainted bricks and soil—the spaces having been filled with lime concrete. The sewers and drains are regularly flushed and permanently ventilated. All the closets within the castle have also been, from time to time, reconstructed and ventilated. The late Prince Consort paid strict attention to works of general improvement at the castle. Sir James Clarke is known to be an advanced sanitarian, and Mr. Turnbull fortunately had seen the necessity for proper subsoil drainage and sewerage in Worsley Old Hall, which works he devised and executed just before entering upon his duties at Windsor Castle. The experience of Mr. Rawlinson may probably suggest some improvements in details. His report, if published, will inform us how much sanitary work has been done, as also the sanitary condition of the castle at this time.

As typhoid fever is known to be generated amidst gases of decomposition, it may be as well to have Buckingham Palace, Balmoral, Holyrood, and Osborne examined by a sanitary engineer.

* To be continued.

## THE PROPOSED MEMORIALS OF THE PRINCE CONSORT.

THE sub-committee met in the Mansion House on Wednesday last, the Lord Mayor in the chair, and proceeded with the organization of arrangements for procuring subscriptions. The amount promised to that time was nearly 21,000*l*.

Numerous suggestions as to the form the memorial should take have been addressed to the committee; but at present they confine themselves solely to raising a fund. When the amount is known they will then be better able to consider what should be done with it. For our own part we desiderate a grand union of the arts in honour of one who knew and loved them all. We see in the mind's eye a magnificent Temple enshrining a noble statue of the Honoured One. Upon and around the pedestal are groups and *relievi* illustrating his character; while other *relievi* and paintings, in the entablature and elsewhere, set forth the incidents of his life. The worker in metal, the glass-painter, the mosaicist, have co-operated with the architect and sculptor: marbles of all sorts join with the richest materials of their several kinds and the cunningest art; and we have at once a fitting monument for the Hero of the family-life, and an evidence of the position to which the arts have attained amongst us. A large sum would of course be needed to make the vision a reality—but what of that? It would be a good investment for the country; a worthy evidence of the national feeling: that which would give joy and elevation of thought to generations, would be cheap at a very large sum. The genius required to produce it might be more difficult to find than the money; but even that we think would be forthcoming if properly called out.

---

AMONGST the many other suggestions as to the form which a metropolitan memorial should take, is one for the completion and adornment of the interior of St. Paul's Cathedral, according to the design of its great architect; an excellent object in itself; but not very distinctive, we fear, of the purpose in view. Such a work would constitute a much more fitting tribute to the memory of Wren, and would give special emphasis to the celebrated "circumspice," as well as honor to the architect. Another suggestion is that of a correspondent of our own, under the signature "Habitans in Urbe," that clock-towers might be erected in various parts of the metropolis to the memory of the Prince; and so far such a suggestion would be in accordance with our idea, inasmuch as our correspondent suggests a combination of architectural with sculptural art; a statue of the Prince forming a feature in his sketch of such a tower as he proposes. The idea, however, does not strike us as very appropriate; although the association of time with eternity, as indicated by a clock-tower, is certainly not so much out of keeping with the object in view as in many other suggestions, where the main design appears to be regarded as of very secondary and insignificant importance indeed.

The provincial movement continues; but the Lord Mayor of London, having sent a circular throughout the provinces, requesting contributions to the one great central and national monument, local memorials in the mean time become a secondary object; although, already, not a few towns appear to contemplate the carrying out of both purposes, as at Southampton, Brighton, Cambridge, Hull, and elsewhere. At Hull the local memorial is proposed to take the form of a statue in the Town Hall; but there are various suggestions here as in other places, such as that of a local school of art. In Cambridge, suggests A. B. C., in one of the local papers, "a great and much required good would be done" were "a school for the benefit of Cambridge and the neighbourhood" erected. At Brighton a county meeting is to be held as to a local memorial; but opinions are divided as to whether contributions to the national monument should supersede the local one. At Southampton a statue is spoken of. At Derby a stained-glass window is to be placed in All Saints Church by the parishioners as a memorial of the Prince.

The proposal that the Birmingham memorial should assume an educational form has been thrice negatived, and one of a monumental character has been almost unanimously sanctioned, both in committee and at a public meeting on the subject. Sir Francis Scott, in advocating a combination of architecture with sculpture, appears to have restricted himself to the idea of a monolith, ornamented in *bas-relief*; the most prominent object being a head of the Prince, and others being subjects illustrative of his visits to Birmingham. Mr. Henry Godwin, architect, had previously written to us, making the same suggestion.

In reference to a proposed national monument in Edinburgh, a meeting has been held in Fifeshire, at which a committee was appointed to act in concert with the Central Committee in Edinburgh. Colonel Balfour, Vice-lieutenant of the county, who is one of the local committee, expressed himself as desiring much that Scotland should erect a monument in Edinburgh rather than join with England; and the meeting unanimously approved of the object contemplated.

It is stated, we may here very appropriately add, that the sale of photographs of the late Prince Consort in Paris is something quite surprising; one shopkeeper having, it is said, disposed of no less than 30,000!

---

## THE DECORATIVE ARTS IN ITALY; AND THE FLORENCE EXHIBITION.

WE return to the paper read by Mr. M. Digby Wyatt, at the Society of Arts:—

To the Cavaliere Sella, and to his exertions in the Italian Parliament, that nation is indebted for the conversion of an Exhibition, limited, as originally contemplated, to the illustration of Tuscan manufactures only, into one in which evidence, greater or less according to circumstance, is to be found of the artistic and industrial capabilities of almost every district of that united kingdom, whose existence as such every well-wisher to the cause of liberty, and every one who honours the ancient traditions of excellence in design still preserved in that favoured land, must ardently desire should be preserved.

The task of the critic who would attempt to minutely characterize individual productions, so far removed from the eyes of those he may have to address as to render impossible any appeal on their parts from his judgment to material evidence, must, it appears to me, be alike unjust to those whose works may be criticised, tedious to those addressed, and too one-sided to be either interesting or profitable. I propose, therefore, to take a broader view of the entire subject of the Italian decorative and industrial arts than I should probably do if the means of rectifying any errors of individual judgment on my part were within the reach of those to whom I venture to offer the following observations.

The natural sequence of emotions most readily to be imagined as occurring to an educated Englishman on entering the Exhibition building at Florence would be, as it appears to me, somewhat as follows:—Firstly, his memory would revert to those old glories of the days of Florentine independence, of Genoese and Venetian magnificence, and of Roman Pontifical autocracy, in which the fine and decorative arts are known to have reached a pitch of perfection scarcely rivalled in the palmiest days of Greece and of the Augustan empire. He would naturally inquire what those old Italian arts and industries were, how far they co-existed and were united, and under what social conditions they were developed?

His second inquiry would naturally be, how much of that ancient power still lingers in the hands of the descendants of those by whom the original greatness was attained?

The third subject of investigation would probably be, after taking stock of the present, what materials still exist amongst the Italians likely to carry to a higher perfection than has been as yet attained in recent times, the arts for which "*Italia la bella*" was once so famous?

Recognizing, as no one can fail to do, the retarding influences which have so long operated to fetter and depress the wonted vivacity of that highly imaginative people, it is indeed an interesting problem to endeavour to trace the direction in which a greater degree of personal liberty than they have hitherto been permitted to enjoy may tend to revive those energies which have too long been overshadowed by a baneful condition of social oppression. From her past and her present may thus, to a certain extent, be augured an Italian future.

In all this, doubtless, there must be some moral for us; and the fourth aspect under which any Englishman, anxious for the augmentation of his country's greatness, would naturally regard the present evidences of capacity manifested at Florence, would be to consider what convenient improvement his countrymen may derive from the lessons to be at present learnt in Italy?

Following this order of investigation, my remarks will be grouped in subordination to these four leading aspects, under which the subject may be regarded. We shall therefore consider first—and far too briefly for the grandeur of the theme—what the old Italian arts and industries were.

It appeared to those in whose hands the initiation of the Great Exhibition of 1851 rested, as likely to prove an important element in preparing the way for a due appreciation of that display, that a collection of works, illustrating the perfection to which industrial processes had been carried in ancient and Mediæval times, should be submitted for general study and investigation by the public, previous to their being called upon to estimate the relative value of corresponding cotemporary processes. Many of those I have the honour of addressing cannot forget the success which attended that Exhibition, inaugurated under the auspices, and mainly through the direct action, of the Society of Arts.

A similar idea seems to have struck the Italians, and to have led to the bringing together a very remarkable collection of specimens of ancient Italian technical art; mainly through the active exertions and public spirit of a Florentine medical man and distinguished connoisseur, the Dr. Guastalla, whose energy has already tended to infuse new life into the administration of the Florentine museums. Several of the princely Italian families co-operated in this good work, the proceeds arising from which, it was determined, should be voted to charity.

Within the walls of a large house, in the new Piazza dell' Indipendenza, were consequently crowded together a great quantity of objects, illustrating almost all those industries with the choicest specimens of which Italy was wont, from the end of the fourteenth to the beginning of the seventeenth century, to supply the factitious necessities of the most highly-cultivated portion of the royalty, aristocracy, and rich "bourgeoisie" of Europe.

With such examples of these arts as we may be now thankful to possess in the Museum at South Kensington, it is little necessary for me to dwell in detail upon the classes of objects collected in the Casa Guastalla. It may be sufficient to say, that bronzes worthy, if not wrought by the hands, of men such as Ghiberti, Cellini, Donatello, Michelangelo, and John of Bologna, were not wanting. Neither were the finest Venetian glasses, Milanese and Ferrarese arms and armour, Siennese and Florentine illuminations, Umbrian Majolica, enamels of various kinds, goldsmiths' work, silver repoussé work, iron work, niello, medals, lavori di commesso, or mosaics, and coins, cuir bouilli, tapestries, rare tissues, lavoro all' Azzimina or damascening, tarsia or marquetry, and marble, ivory, and wood carving.

Where so much was beautiful, it seems almost invidious to dwell upon points of remarkable interest; but it would be treason to the royalty of excellence to pass over two or three objects especially celebrated in the history of art, and now brought under public notice after ages of seclusion, if not neglect.

The most interesting of all was probably that patera in bronze, which Vasari relates that Donatello worked for the noble Casa Martelli, to show how perfectly it was within his power to rival the exquisite fragments of antique bronze casting and chasing, which in his days were as much the rage among great Italian collectors, as majolica and "vieux Sèvres" have been lately among French and English. As perfect almost as it could have been when it left the hands of that rare artist, this beautiful piece of sculpture justifies all the praises which Cicognara has so lavishly bestowed upon it in his "History of Sculpture."

Another specimen, of little less historical interest, was the bust in marble, representing Marietta Strozzi, wife of Celio Calcagnini di Ferraro, by that great sculptor, who unfortunately died too young to leave much behind him, Desiderio da Settignano. Jealously preserved in the family of her descendants in that palace, the architecture of which, by Benedetto da Majano and Pollaiuolo, has mainly stamped the Tuscan palatial style with its easily-recognized distinctive feature, there can be no doubt of the true descent of this beautifully-preserved work of art.

Another item, small in bulk, though great in artistic value, was also contributed from the same collection—a little key in chiselled steel, ascribed to Benvenuto Cellini, and, if not actually executed by him, eminently worthy of his most dexterous hand, and of all that skill which he appears to have acquired in the workshop of Paolo Arsago, the Milanese.

Probably, as far as unique curiosity is concerned, the most interesting groups of objects in this collection, were the very important series of coins of different Italian cities and mints; the medals of

illustrious personages, by Pisanelli, Sperandio, Cellini, Pollaiuolo, and others; and a very curious collection of cut and stamped leather work, which the energies of the purchasers for the South Kensington Museum may, I hope, ere this have acquired for our admiration in this country.

Important as the objects in this collection unquestionably were, as filling up the detail of the still-life of those pictures, in which the stately Gonzagas, Medici, Sforzas, Strozzis, and Dorias occupied the foreground, it is of course in the great monuments and permanent museums of the country that we learn to recognize how inseparable the perfection arrived at in these minor arts was from that great sublimity attained in the noblest efforts of the architect, the painter, and the sculptor.

It is precisely in this union of imagination of the loftiest kind with perfect technical dexterity in art productions, on either the vastest or the most minute scale, that the great strength of the excellence of the finest Italian designs in old time consists. All these relics, whether taking the form of gigantic churches, of stately palaces, of heroic works of sculpture, of extensive frescoes, of elaborate furniture, of pottery, glass, and even ornamental leather, show how absolutely indispensable to personal enjoyment art then was. * * *

Of the architectural designs in the Exhibition I am sorry to be unable to speak in laudatory terms. The most industrious amongst the artists appear to be Niccole Bregalia and Panfilo Rosati, of Naples, who produce many drawings of architectural fragments and restorations from Pompeii, executed in the French academic style. In the remainder there is but little merit, although in water-colour drawings there is evidence of considerable command over the delineation of architectural form.

The modern paintings of the Exhibition have been so fully and ably commented on in the pages of the *Times* by Galenga's brilliant pen; of the *Athenæum*, by Mr. Trollope, and of other journals, that I do not propose to dwell at any length upon them, but would simply remark that the old school of David and the classicists, as represented in Italy by Camuccini, and to a certain extent by his rival, Benvenuti, appears rapidly dying out; and in place of the well-drawn but artificially grouped and badly-coloured gallery pictures, such as many of those of the late Professor Bezzouli, of Florence (one of which figures in the place of honour in the great gallery of the Exhibition), *genre* and landscape paintings, less carefully drawn, but embracing more romantic incident, livelier action, more natural effect, and far better colour, appear to predominate.

There are, however, two large gallery pictures which merit the highest possible commendation. One is, "The Expulsion from Florence of the Duke of Athens," by Professor Stefano Ussi, which is a noble historical picture; and the other a picture of great power, by Domenico Morelli, of Naples, called "The Iconoclasts," the subjects of both it will be seen, rendering tribute to the importance, the one of political, the other of spiritual, liberty.

Among the best of the pictures of less pretension than these two, may be noted, "The Procession of the Burial of Buondelmonte," by Altamura, of Naples; two other pictures by Morelli; "The Council of Ten in the Courtyard of the Palazzo Ducale, on their way to the Hall of Council," by Celintano, of Naples; "Some Incidents of the War," painted by Carlo Ademmolo, of Florence; and "The Battle of Magenta," by Induno, of Milan, a smart *souvenir* of Vernet. Of the Neapolitan school one has to remark the specially improved character of the colouring and mode of painting.

For the same reason that I have so summarily disposed of the paintings in the Florentine Exhibition, I would refrain from entering into detail upon the subject of sculpture; but as, proportionately, the monuments in the latter art are of a superior quality to the evidences of ability presented by those of the former, I think it but just to indicate a larger number of those works which appeared to me to possess distinguished merit.

To say that the spirit of Canova is yet dead in Italy would be incorrect; but one is happy to recognize that, while much of his effeminacy and artificial composition is disappearing, much of his beauty of form and delicate finish in marble working is satisfactorily preserved. The care he bestowed in modelling the articulations of limbs, and the extremities generally, is rivalled in most of the best works now exhibited, although some few, otherwise excellent, fail in those important details.

The work which has attracted most attention, and with good reason, is the well-imagined and gracefully carried-out figure of "A Girl Reading," by Pietro Magni, of Milan. That sculptor, with Strazza (the author of the "Ishmael," in the Exhibition of 1851), and Vela, of Milan, an artist of great talent, may be looked upon as leading representatives of the Romantic school of sculpture in Italy, as opposed to the more academic style, which finds its ablest representatives in Cambi, Santarelli, Costoli, and Fantacchiotti.

Dupré, of Florence, a sculptor of very great power, partakes of the merits of both classes, but falls slightly, in some of his works, into that leading defect of inattention to pure beauty of form with which the Romanticists, in aiming at expression, rather than the "beau ideal," may be occasionally reproached.

The most absolutely Canovesque of sculptors is, apparently, De Fabris (lately deceased), whose "Love and Psyche" is one of the honied but feeble reminiscences of the subject so dearly loved by his master, the father of modern Italian sculpture.

It is to be regretted that Tenerani, of Rome, Canova's favourite Italian pupil, has not contributed to this exhibition, since his great powers would have gone far to vindicate the school of that really fine artist, under whose influence Tenerani's best works have been produced.

The principles upon which I believe the popularity of Magni's statue of the "Girl Reading" is founded, appear to me so important, and, indeed, so novel in their application to modern sculpture, that I think it my duty to dwell for a few minutes upon them. A maiden, of no great pretensions to beauty, either of form or feature, and in the simplest dress, is represented, seated on a common rustic chair, reading. There is no very great study evidenced in the arrangement of the lines, either of the figure or of the draperies, and, indeed, in one important particular, the modelling of a portion of the bosom, a manifest defect is to be observed. The head is very truthfully modelled, and the expression is one of quiet concentration on the theme of the volume, in the study of which the reader's whole attention seems to be absorbed; that theme being, as may naturally be imagined, at the present juncture, the development of Italian liberty under the sovereignty of Victor Emmanuel. Such elements may not, in description, perhaps, appear likely to result in the production of a striking work of art; and yet the power of this small statue is such as to arrest and enchain the attention of every one coming within sight of it.

The potency of the spell I believe to mainly consist in the concentration of purpose manifested in the whole composition. There is no straining for effect—to borrow a theatrical phrase, "no playing to the foot-lights"—and none of that coquetry, half conscious of nudity, and evident flirting of the damsel with the spectator, which disfigure so many ordinary representations of female form. Other charms are unquestionably the ease, nature, and simplicity of the whole arrangement. Nothing is allowed to interfere with the tranquillity of the action, and such is the effect of this appearance of quiet, that almost instinctively the spectator treads, as he passes, with lighter foot, and speaks "in bated breath," lest he may startle the marble maiden who sits wrapt in her brooding fancies, as it were, unconsciously before him. A second of Magni's works, "An Indian Mother," seated in a shawl swung over the branches of some trees, in such a manner as to make the figure appear entirely unsupported, is a *tour de force* in marble working, the slight tendency to extravagance in which is to be overlooked in the elegance of the action and the careful modelling of every portion.

A third work, by the same sculptor, is of considerably less merit. It represents a statue of Socrates, and, whether intentionally or not on the part of the artist, conveys an almost instinctive reminiscence of what one cannot but fancy the sovereign of United Italy himself might be with little else upon him than a rather scanty shirt. The compliment, if it be meant for one, is indeed somewhat dubious.

Vela, another Milanese, contributes one figure only, and that of an almost too voluptuous cast of beauty and attitude—"Spring," a nymph bounding upwards, but, as it were, caught and entangled in the vernal flowers from which she seems to be rising. In delicacy of modelling, and that truthful rendering of flesh in marble, which the Italians term *morbidezza*, there is nothing, I think, in the whole Exhibition to equal it. It is to be regretted that other works of Vela's are not to be found at Florence.

The most ambitious figure is certainly the "Daughter of Zion in her Desolation," by Morelli of Leghorn; but in aiming at grandeur the sculptor has neglected beauty, and thus fails to engage the sympathies of the spectator.

Fantacchiotti of Florence, who enjoys a great and deserved local reputation, exhibits several works of very considerable merit, the best being the monument to the late wife of Mr. Spence, an English artist, long resident at Florence. The figure, which is that of a very beautiful matron, is represented as extended, after the manner of some of the finest of the cinque-cento monuments, on a bier, recalling, in many particulars, the general form of the ancient sarcophagus. In front are amorini, and beneath are square tablets, inserted, as it were, in a plain and well-designed pedestal. The special merit of this work is twofold. In the first place, all that may be called pure sculpture,—that is, the representation of the human form, and the draperies and ornaments connected with it—is thoroughly good; and in the second, these elements are combined with such conventional lines, masses, and ornaments, as adapt the whole composition for alliance with whatever may happen to be the architectural form of the structure in which this beautiful work may be destined to be placed. What the consequences of the common want of skill in similar combinations may be, it is scarcely necessary to point out to an audience whose remembrances of St. Paul's and Westminster Abbey would, probably, be too poignant for me to do more now than hint at.

Strazza, whose "Ishmael" in the Exhibition of 1851, and whose "Audace," in the Crystal Palace, have made us well acquainted with his capabilities, fails to sustain them at Florence in his statue of the "Sposa Novella," which has, however, received the compliment of purchase by the king. Neither strikingly beautiful nor very expressive of its title, the modesty of the recent bride seems rather of that affected class the freedom from which I have already commended in Magni's masterpiece.

Santarelli, of Florence, a well-known artist, exhibits a "Shepherd Boy," which has merit; but his "Magdalen" is too close a reminiscence of that of Canova, and fails to sit up comfortably. The infant's "Prayer of Innocence" is offered up rather by a little man than by a true bambino.

The same reproach as to want of youthfulness in form may be applied to the "Amore Mendicante" of Cambi; the general intention and action of which, however, is clever and expressive. The same sculptor's "Eve" recalls far too much and too many of the leading defects of our English academician Bailey.

Pierrotti of Milan exhibits a very good anatomical study in the shape of "A Hunter Killed by a Snake." The subject is a difficult one, and has been well mastered by the skill and knowledge of the artist.

In the true academic style, Costoli's "Death of Menecæus" is to be highly commended, as being thoroughly well modelled, and well balanced in a difficult *pose*. His "Charity," a large bas-relief, is by no means so good.

Dupré shows a "Mater Dolorosa," the character of which is sublime and devotional in a high degree. He has also a "Sappho," in an attitude not altogether dissimilar to, although in no way plagiarized from, that of the well-known work of Pradier; and a sculptured pedestal for, apparently, a large flower-basin. The modelling and composition of the figures in alto-relievo which decorate the latter, it is no small praise to say are, I consider, fully equal to those we so much admired in Professor Drake's pedestal in the Great Exhibition of 1851,—a somewhat similar work. The attitude and expression of the "Sappho," and the draperies are admirable; but some portions of the nude have been modelled from rather too low a type of female beauty to be altogether satisfactory in a work of ideal art.

Admitted into the fellowship, if not the nationality, of Italian sculptors, are the well-known American and English artists, Power and Fuller. The "Greek Slave," and "Youth holding a Shell," the Proserpine, and many admirable busts by the former, are too well known in this country to need dwelling upon; but with his "America" we are not so well acquainted. Unlike the life and vivacity of that population, whose every breath it appears must be drawn in an atmosphere of *sensation*, and whose vital energies seem inexhaustible, the embodiment of the sublimated essence of modern republics is tame and dead; but, like at least the major section of that unhappy continent, she stands but feebly and totteringly, and one touch only seems wanting to overthrow the unstable goddess.

By the latter artist (Captain Fuller), there is a remarkably good figure of a "Drowning Boy,"

admirably modelled, and full of energetic action. The tempest-tossed sailor lad still struggles, though evidently unavailingly, with the elements which overpower him.

This scanty list by no means exhausts the excellencies, or perhaps rightly points to the salient defects, of the really fine collection of works of sculpture, which it is not too much to say formed the leading feature of the Florentine Exhibition: but I feel that it is necessary to quit the field of pure sculpture for that application of the art which lends its highest graces to industrial production.

The two most distinguished workers in this department of industry, worthy maintainers of the fame Brustolone acquired for Italian wood carving in the last century, are well known in this country—Barbetti and Pietro Cheloni, of Florence.

The former exhibits a grand door, carved with no less than twenty-nine alto-relievos, of biblical subjects, treated somewhat after the manner of the celebrated gates of Ghiberti. Unlike them, however, the sculptures under notice have been executed in walnut wo d, as a commission for Prince Demidoff, for the entrance door to whose Russian chapel at San Donato, near Florence, they are intended. The general design is, it appears to me, monotonous, from its extreme rectangularity, and is ill arranged in the junctions of the vertical and horizontal divisions with the semi-circular head of the door. The carving is, however, executed in so masterly a style as to constrain an admiration for the details, which fails to be excited by the general aspect of the whole.

The same artist contributes a large oak bench, the seat of which is hinged, in order that the lower part may answer the purpose of the *cassapanca*, which formed so leading a feature in the Italian interiors of the quattro and cinque cento periods. In general design this work is better than the door just referred to, and leaves behind a feeling of more entire satisfaction.

The capability for the most important works, shown by these productions, is destined to be put to an even loftier purpose, since Barbetti and his sons are now engaged in the execution of a magnificent case, 6 feet 6 inches high, entirely wrought in ivory and ebony, to hold the national crown of Italy. Of this grand work a full-sized water-colour drawing was exhibited, and I fully believe that the realization of the design (which is exceedingly good), will be not unworthy of the ancient glories of Italian ornamental carving.

Cheloni works in a manner which very perfectly reproduces the delicate handling of Mino da Fiesole, Civitale da Lucca, and Andrea Ferrucci, and proves that, with judicious encouragement, he may become a formidable rival to the most distinguished amongst the Parisian magnates in the production of luxurious furniture. His bookcase, and, above all, a single little panel in wood, fully justify this assertion. It is to be hoped that this fine bookcase, as well as the case for containing the national crown, by Barbetti, may form ornaments in our Exhibition next year, where they cannot fail, I think, to be greatly admired.

The only rivals, although there are, of course, many approaching the excellence of Barbetti and Cheloni in ornamental carving, are Antonio Superchi, of Parma, and Professor Giusti, of Sienna. The former exhibits only a small panel, carved in soft wood, with arabesque ornament. It is, however, a masterpiece. The latter works in ivory, and appears to be well supported by English patronage, since his miniature reproduction of the celebrated fountain of Jacopo della Quercia at Sienna, and his exquisite little picture-frame, have been produced, the former for the Earl of Northesk, and the latter for the Marquis of Northampton. For the Count Agostino da Gori, Giusti has wrought a little coffer or box to contain autographs of men of science, artists, poets, &c. The shrine is by no means unworthy of the relics.

Time will not permit of my dwelling at greater length upon individual specimens, or even extending my catalogue of ingenious artists. It may suffice to say, briefly, that in marble, stone, ivory, ebony, and plastic compositions, the application of sculpture to industry forms, probably, the most distinguished feature of the industrial portion of the Florentine Exhibition.

It would be unfair to the Italians to pass from the subject of applied sculpture, without noticing one form of it in which, from classical times to the present, they have maintained a decided pre-eminence over other nations. I allude to the art of working in gems and precious stones.

The names of Girometti and Odelli of Rome, are celebrated, and their productions still command very high prices, in proportion, perhaps, to the labour, but too great for the art displayed; as, for instance, the single cameo of Signor Girometti is valued at no less than 30,000 francs, or 1,200*l.*, a price, possibly, as the Italians say, "da combinarsi." Neither of these artists, in my judgment, sustains his previously-acquired reputation; while the intaglios of Berini, of Milan, a less known man, are, if not so valuable, far more agreeable, being both designed and wrought in better taste, and rather reproducing Grecian than ancient Roman styles of execution.

## WAREHOUSE CONSTRUCTION: FIRE-CLAY.

I HAVE read with much attention the letters which have appeared in the *Builder*, at different times, advocating the use of fire-bricks in the construction of warehouses, &c.; but in my opinion none offer such good suggestions as are contained in a letter signed "H. H. V.," in the *Times* of 1st July, a copy of which I now send you. Mr. Hussey Vivian, M.P. for Glamorganshire, has authorized me to say that he was the writer of the letter referred to, and will feel pleasure in giving any information to parties requiring it, his address being Park Wern, near Swansea.

R. F. L. J.

The subject has been carried farther in our columns since the date of Mr. Hussey Vivian's letter, so that we do not think it necessary to reprint it. On the question of fire-clay doors, Mr. Glover has sent us a communication in reply to a recent correspondent, in which he says,—the question is not whether fire-clay doors can stand the trial which he puts, but it is this,—can they be used under certain conditions and arrangements to withstand the effects of heat and water, under all and every contingency? I fearlessly say that they can; but, as applied in the ordinary way, they cannot do so. In this may lie the difference between a practical and a merely theoretical knowledge.

It is well known that no description of fire-clay will stand against white heat and water (there is one material which will, but it is too expensive for commercial purposes), but how much less can iron be trusted in connection with it. From extensive, and, I may say, costly experiments, under every kind of condition, I have found that an expansive material like iron cannot be trusted with clay, be it covered or protected as it may.

As regards the walls after a conflagration not being injured, I would ask what man would risk his reputation by restoring a building upon them? In the very nature of things they must be practically useless.

Whatever may be said about sunken floors, your correspondent will find that the plan will be adopted. "Locomotion" is provided for by an easy inclined plane; and it is only necessary to say, in reference to the "soaking" of goods, that the choice is between that and destruction. But besides this it should be remembered that, in the presence of a body of water, such as a sunken floor would retain, the intense heat would be lessened, and the carcass of the building left intact.

But, by my system of shutters and doors, a fire can be suppressed even without water or engines, or even in the absence of fire-clay doors.

## PARAFFINE AND THE AMERICAN MINERAL OILS.

THE American mineral oil trade is becoming so important that it is believed we shall be soon importing it for distillation into gas instead of exporting coal for gas-supply to America. At present it is said that no less than 20,000 barrels of petroleum, as it is sometimes called, are on their way to England. The importance of this trade may be conceived when it is considered that, besides the extraordinary extension of paraffine here for light in private dwellings, where it is used just as the American mineral oils are used in America; and also the probable adoption of it in many cases for distillation into gas; these oils are also used for various other purposes, as in the production of the fashionable dyes called Magenta, Roseine, &c.; the manufacture of solid paraffine candles; and for lubrication of machinery. But perhaps one of the most extensive uses to which the cheaper and more dangerous kinds of these oils is put may be found to be the adulteration of the purer or safer forms, such as that distilled by Young from the Boghead mineral; and, since much of what is called petroline, and paraffine, is explosive and dangerous, the *importance* of the subject presses itself all the more strongly on the public notice. It is questionable, too, whether much of the adulterating material be not of the nature of naphtha and camphine, which have been so long notorious in this respect.

A *test* of the specific gravity of all such oils was lately brought under notice; but what signifies the specific gravity if, as now appears, some of the worst kinds used be a mixture of oils of different specific gravities? An oil even with too high a specific gravity to burn well in the peculiar kind of lamps now in use for such oils may be mixed with explosive oils of a very low specific gravity, which will still be explosive, although the mixed material may show a good average specific gravity. Considerations such as these suggest a preference for the test which we some time since suggested of applying a lighted match to a very small quantity of the oil; when, if explosive, it will immediately burst into flame; but if good paraffine, it will not so easily take light; while the best of all is that which requires a wick to enable it to burn by mere application of a match. Mr. Herepath, the well-known chemist, now advises this plan; recommending a few drops to be spread upon a saucer or plate and touched with a lighted match. Some ingenious mechanic ought also to apply himself to the further improvement of paraffine lamps: if we mistake not they are at present improving in the wrong direction, so as to give less light with a greater expenditure of oil than formerly; and this is but too likely to be the case so long as the lamps are *invented* by those whose chief interest and desire is to sell (not these, but) their own peculiar oil. It is evident, too, that tradesmen who profess to be agents of respectable manufacturers make this a mere blind to enable them to sell dangerous oils got from other quarters because they are cheaper and yield more profit, even though the foolish knaves are thereby ultimately destroying their own business by disgusting the public with "paraffine," good, bad, or indifferent, on account of the uncertainty of this beautiful, cheap, and useful light; which, moreover, even apart from the explosive nature of the adulterating sorts, constitutes, when so adulterated, a perfect lamp-black manufactory, from the immense volumes of smoke which it is perpetually apt to give off, even under pretty careful management.

## CHRIST CHURCH SCHOOLS, WEST BROMWICH, COMPETITION.

AT a committee meeting held on Monday evening last, the design of Mr. John Weller was selected for these schools. There were nineteen competitors. There are to be three school-rooms—one for 150 boys, one for 150 girls, and one for 150 infants: class-rooms are provided for each school-room. There is also a residence for the schoolmaster.

## ARCHITECTURAL INSTITUTE OF SCOTLAND.

A MEETING of the Architectural Institute of Scotland was held in the Institute's rooms, George-street, Edinburgh, on Monday, the 13th ult., Mr. J. D. Peddie, president, in the chair.

A paper was read "On the Sanitary Condition of the Dwellings of the Operative Classes in Edinburgh, and the means of improving them," by Dr. Alexander Wood, Vice-President of the Royal College of Physicians of Edinburgh. It was an elaborate and interesting memoir, fully confirmatory, so far as the subject extended, of the particulars recently given by us of the condition of Edinburgh.

The members of the Institute are invited to contribute papers or communications upon the following subjects of architectural interest:—

Scottish Castellated Structures; Ecclesiastical Edifices; the Ancient Domestic Architecture of Scotland; Architecture of other Countries, ancient and modern; Farm Buildings; Cottages for the Working Classes, &c.; the application of Glass, Iron, and Brick-work to Drains and other Structures; Interior Decoration; Ventilation and Sewerage; and, in general, on any subject connected either with the mechanical and constructive, or domestic branches of architecture.

The Council will be happy to afford opportunities at any of the stated meetings of the Institute, for the exhibition of designs and models, or of any material, implement, or work of art, connected with architecture, building, or the relative arts.

Fellows and Associates are reminded of their privilege of admitting their apprentices to the

MONUMENT TO THE LATE DR. BROWNE, (R.C.) BISHOP OF ELPHIN.

meetings of the Institute by a Session card. Lists of the subjects of competition for the prizes offered by the Institute to apprentices may be had on application to the secretary.

## MONUMENT IN MEMORY OF THE LATE RT. REV. DR. BROWNE, R.C. BISHOP OF ELPHIN, IRELAND.

This elaborate monument has recently been erected in the Roman Catholic Church at Roscommon, to commemorate the late Catholic bishop of that portion of Ireland. Owing to the limited space, and utter absence of all ecclesiastical character, of the church, which was formerly the court-house of Roscommon, a mural tomb was the only form which could be adopted.

The materials of the design, which is from the pencil of Mr. Goldie, are Caen stone, with marble shaftlets; inlays of spar and marble; and a basso-relievo, in white marble, of the head of the deceased. The general idea has been suggested by the cinque-cento mural monuments so frequent in the churches and cloisters of Southern Italy, freely rendered in this case into a Gothic treatment.

The work was executed from the drawings of the architect, by Mr. H. Lane, sculptor, of Birmingham and Dublin. The total cost of the monument was 80*l*.

## METROPOLITAN BOARD OF WORKS.

### ELECTION OF DISTRICT SURVEYORS.

On the 24th ult., the Board proceeded to elect district surveyors for Bethnal-green, St. James's, Westminster, and Putney and Roehampton. The following is a list of the candidates:—R. Kerr, G. W. Mayhew, H. Stevens, H. Field, S. S. Markham, H. S. Legg, J. J. Cole, Sidney Godwin, S. Salter, W. Lightly, J. Billing, A. Cates, J. Liddiart, H. Laxton, E. Roberts, J. W. Papworth, J. Houle, G. O. Lane, A. Peebles, E. L. Paraire, F. Todd, — Haynes.

The six highest on the first voting for Bethnal-green, ranked in the order in which the ultimate votings placed them, were—H. Stevens, Knightly, Kerr, Billing, Markham, Field. Mr. Stevens was accordingly elected.

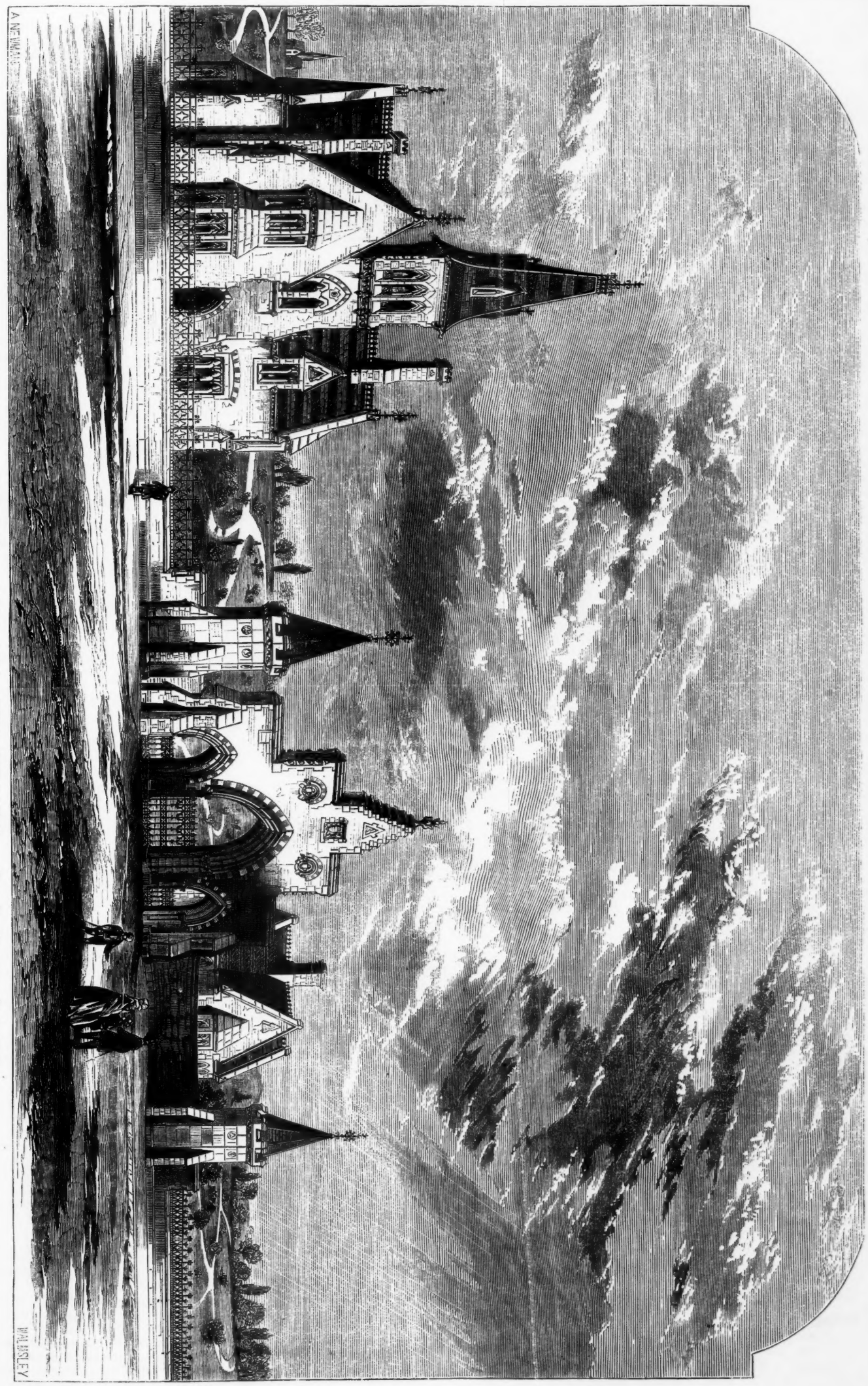
For St. James's, Westminster, the six stood,—Kerr, G. W. Mayhew, Legg, Markham, Lightly, Field. Mr. Kerr was therefore elected.

For Putney and Roehampton, Mr. H. Field was elected.

## BIRMINGHAM CEMETERY.

On a previous occasion we gave views and plans of the chapels now in course of erection for the cemetery at Witton.* To these illustrations we now add, as promised, a view of the Lodge and Entrance Gates.

* See p. 13, *ante*.



BIRMINGHAM CEMETERY: LODGE AND ENTRANCE-GATES.—MR. R. CLARKE, ARCHITECT.

## THE NEW HARTLEY COLLIERY ACCIDENT.

THE terrible tragedy of the New Hartley Pit has been brought to a close. The 219 men and boys sleep the sleep of death, and have been carried to their last resting-place. It will be long, however, before the stunning effect of this blow will be forgotten, not only by the 400 and more of widows and children who have been so suddenly deprived of their means of support, but also by the public. In whatever way we consider this calamity, it is most appalling. Patiently awaiting a deliverance which they were destined not to realize, the poor fellows all placed themselves within a very short distance from the shaft and the furnace; and this would seem to have been a chief cause of their death. It is reported that further in the mine the air was comparatively pure; and it seems strange that experienced men who had spent the chief part of their lives in the coal-pit should not have endeavoured to escape as far as possible from the danger. It was natural for them, however, to remain near the point whence hope of deliverance was to be looked for, although a more scientific knowledge would have shown the danger of this. It was on Thursday, the 16th of January, early in the morning, that the beam of the hydraulic engine fell and buried all who were in the "yard seam." There appears to have been only one written record kept by any of the miners, and this was made on Friday, the 17th, the day after the accident, in the time-book of Amours, the back overman, whose body was found near the furnace, and is as follows:—

"Friday afternoon, half-past two o'clock. Edward Armstrong, Thomas Gledston, John Hardy, Thomas Bell, and others, took seriously ill. We all had a prayer meeting at a quarter to two o'clock, when Tibbs, Henry Sharp, H. Gibson, and W. Palmer [here is a blank] exhorted us again, and Sharp also."

This shows that the pent-up gas was, even at this early time, beginning to perform its deadly work; but, up to the following day (Saturday), the imprisoned miners gave the well-known signal by "jowling" that some of them still existed. In the course of that day, however, all further indications of life within the pit ceased.

Notwithstanding all this evil, it is so far consoling to think that the men and lads passed away without bodily anguish; and that the occurrence has caused an extraordinary display of noble feeling and bravery. As soon as the news of the condition of the men spread abroad, the most skilful viewers and managers of mines thronged from all parts of Northumberland and Durham, and even from more distant places, to New Hartley; all anxious to be useful. Medical men were no less prompt; and the ordinary workers from neighbouring collieries came in hundreds to volunteer services which could only be performed at the risk of life. Day and night, and day after day, the sinkers used the most wonderful exertions to clear the shaft of the wreck of the brattice which choked the pit. Slung in ropes, amid the falling of stone and shale and the rush of water which poured down the shaft, the noble fellows wrought bravely in endeavouring to liberate those inclosed below. The difficulty of this task can only be appreciated by those who are familiar with this kind of labour. For such exertions as these we want some suitable reward. Besides the medals of the Royal Humane Society, we need, in this country, other and well-recognized decorations for such occasions. The Bishop of Durham, who has in this case so well shown his sense of the duties of his high office, in his wanderings amongst those desolate in the neighbourhood of the pit, met with some of these men. His lordship says:—

"They were simple, humble men, with not the slightest appearance of any pride in their work: they seemed to think that they were only doing their duty; and that there was not a man in the place who would not have done it, if they had not done it. *I call these men the real heroes of our country:* I feel that Northumberland may well be proud of these men. I feel that our whole country may be proud of these men. I had sooner see such a man, and shake him by the hand, than I would see many a man who has exposed his life and shown the greatest bravery, not in saving, but in slaying his fellow-creatures."

We have some knowledge of the good qualities of the coal-miners of the north of England, and know the justice of the Bishop of Durham's remarks. The deeds of George Stephenson, at Killingworth Colliery, are still remembered; and we trust that the present calamity will lead to the enforcement, by Parliamentary enactments, of regulations which will be the means of preventing wholesale slaughter of such valuable human life. The Government, it is satisfactory to observe, have already moved in the matter, as the following letter will show:—

"Whitehall, Jan. 24, 1862.

"Sir,—I am directed by the Secretary, Sir George Grey, to request that you will transmit to him, at your earliest convenience, a return showing the number of single bratticed shafts in the several collieries in your district; and their depth, diameter, and the mode in which they are subdivided; and also of the number of collieries in your district with more than one separate and distinct shaft; and stating in each case whether ventilating furnaces are used below ground.

"I am further to request that you will state your opinion as to the practicability of requiring that in all large collieries there should be two distinct shafts.

"I am, sir, your obedient servant,

"H. WADDINGTON."

"Matt. Dunn, Esq., Inspector of Mines."

Double shafts in all large collieries ought to be insisted on.

The Earl of Durham, who is a large coal-owner, said with great emotion, at the Newcastle-upon-Tyne meeting, that of all the catastrophes by sea or land he had ever read of, he thought that nothing could approach this awful calamity at Hartley Colliery. The mere thought of it was enough to unman any one. After recommending that ample provision should be made for the widows and orphans, his lordship said:—"There is one other thing to be said in connection with this: it ought to be a warning and a lesson to all engaged in mining operations—and to all employers of labour, such as myself—to spare no expense, to leave no means untried, to secure, as far as is humanly possible, the safety of the men committed to their charges."

The colliers have held several meetings, at which an opinion has been expressed that a Government commission should be appointed to inquire into the manner of working the pits, and respecting other abuses of which they complain. The general opinion of the public will be in favour of this; for, while some of the coal-owners display a wish to do their duty to the men, there are others who are careless. Although of late years great improvement has been made, there is still much to be done in the advancement of education amongst the coal-miners; and this is to some extent rendered difficult in consequence of the demand which there is for boys, both down the pits and at the banks. Nevertheless, there should be some more strict regulations as to this than there are at present.

Not only in connection with this accident but also with others, valuable lives would have been saved if there had been two shafts instead of one: a double shaft would also be useful for ventilation and other purposes. No doubt such a work is costly, but that must not be weighed in comparison with the lives and health of the workmen. Arrangements of this kind should be enforced; and, indeed, it would be to the interest of the colliery owners themselves were they obliged to have a double shaft in such a case as this. It would, doubtless, diminish the cost of ventilation otherwise; and, in preventing such accidents as this, much money would be saved. The loss to the owners themselves in the present instance is said to be something like 10,000*l.*

A coroner's inquest, which seems to have been far too much hurried, has been held on the bodies of those who were killed by the falling of the engine-beam, and has resulted in a verdict of accidental death: there must, however, be another and very searching inquiry as to whether the engine was safe and strong enough for its work.

Robert Taylor, the person who was working the engine at the time of the accident, in reply to questions by Mr. Dunn, the Government inspector of mines, says that the engine was going at its ordinary speed—seven strokes a minute. All the working gear was in order: the steam-pressure was 14lbs. to 1 inch; and, so far as he had observed, everything appeared perfect. He then heard the breaking of the beam and the crash, and then ran away to the handles and stopped the engine. On further examination, Taylor said that something had been done to this beam about a month before. "They got her lifted off the gudgeons, and one of the hydraulics broke: it was for the purpose of getting in new brasses. He was witnessing this process at the handles of the pump, and thought, so far as he knew, the pump was lifted 3 inches. After that repair the engine went on as usual." He also stated that, in consequence of the hydraulics falling, the beam came down upon the chocks: he had not observed that the beam had got any injury by this fall.

Coroner—"Was not the cross-head injured by the sudden jerk?"

Taylor—"No, it was only the beam which broke."

Coroner—"Then the beam received no perceptible injury from that?"

Taylor—"She came into the house and broke the cross-head."

This witness could give no idea of the weight the beam would have to carry, but Mr. Dunn remarked, that, with spears and buckets, and the column of water, the weight would be a long way over 20 tons.

Mr. Dunn to Witness—"Did she work well after you got the new brasses in?" "No, sir, she went down on to the old brasses again."

Coroner—"Did the beam appear to be sound?" "No, there appeared to be a hole under each side under the gudgeon."

"Could anything occur in the shaft so as to lay an extra stress on the pump at the time of the accident?" "There might, but I think the engine was working free enough at the time when the beam broke."

The severe frost may have caused the fracture: such accidents frequently take place, as, for instance, the other day at Chatham, as we have elsewhere noted.

As regards the New Hartley beam, the evidence of Taylor shows that it was not without fault: but we must know more respecting this.

We lately gave some statistics respecting the short duration of the lives of coal-miners. The average length of life of these men is only twenty-seven years. The destruction by accidents is enormous; and not only the best (disinterested) scientific opinion, but also the dictates of common sense, show that this can be prevented; and, even should we pay a trifle more for our coals, we must use all means to prevent such awful accidents as have been so frequent and so fatal.

Not only in the North of England, but also in the metropolis and throughout the country, subscriptions for the support of the large number who have been brought to distress by this event are being raised. A large sum will be required to provide effectual aid. The Queen, in the midst of her own trouble, in a way most touching and womanly, has shown her sympathy by anxious inquiries at the very first rumour of the accident, and repeated the kind expressions of her "tender sympathy," in the midst of "her own misery," with the widows and orphans, for whose behoof, moreover, she has contributed 200*l.* towards the sum required, which has been estimated at 17,000*l.* Already more than one half of it has been subscribed. And while those of wealth and rank are assisting, it is pleasant to notice that various classes of workmen are also contributing. The miners of the north are a numerous body, most of whom would not much miss the value of half a day's work. This alone would produce a large sum; and there can be now no objection made to contribute this to the general stock; for three of the workmen are appointed to form part of the committee of management.

## THE LATE PRINCE CONSORT'S TOMB.

THE mausoleum for the late Prince Consort was commenced on Monday last. It is to be erected in the grounds at Frogmore, as our readers know, within a short distance of the one lately put up for the Duchess of Kent.

Mr. George Dines is doing the work, under Mr. Humbert's direction, and is getting out the ground preparatory for the concrete foundation.

## DECORATION OF THE BUILDING FOR THE INTERNATIONAL EXHIBITION.

THE entire direction of the decoration of the building is committed to the hands of Mr. Crace, who has now completed a specimen of the colouring he proposes to adopt in the great nave. The roof is coloured a light warm grey, with upright scroll ornaments in maroon red rising from the sides to the apex of the roof. The main arches of the nave are painted in a series of panellings in deep red and blue, with margins of fawn colour, relieved with light lines and ornaments, and divided at the joints of the timbers by gilt stars on circles of black. On the crown of each arch is to be inscribed the name of a country; and to avoid the succession of repeated lines of the same colour, variety is produced by alternating or counterchanging the colourings. Thus, if one rib is painted in panels of blue, red, and blue, the next is red, blue, and red; so that by thus varying them, monotony is avoided, and the richness of the whole is increased by the effect of one colour against the other. The arched ribs are formed of three thicknesses of timber, of which the edges of the outer ones are defined by spacings of black and white, while the centre one is painted red.

The series of iron columns supporting the roof will probably be painted pale bronze colour, relieved with light coloured lines, and having the capitals painted red and blue alternately, the raised ornaments being richly gilt. This, however, is not quite determined. The objects to be exhibited will be relieved by masses of red drapery

and the banners of the arms of various countries. We confine ourselves to a simple statement of the intention, until we have a better opportunity to judge of the effect of the work.

## THE SMALL APPROACHES TO THE GREAT EXHIBITION.

WE begin to despair of anything satisfactory being now done in the way of opening up convenient or even decent approaches to the International Exhibition building. The Brompton-road—the highway to South Kensington—which must and will inevitably be widened ere very long, is still untouched, and but too likely to remain as it is, at least till the Exhibition time shall have come and gone, although that is a time when the widening of this main approach to it would have been of immense importance—indeed, of absolute necessity to the public and strangers from all quarters, whose anathemas on London thoroughfares will be much more forcible than pleasant. Moreover, the success of the Exhibition may be materially interfered with by the difficulties of approach to it; and these difficulties will often turn the scale against a projected visit, especially after the first whet of curiosity has been satiated.

All this is the more to be regretted considering how easily and cheaply both the Brompton-road and the road across Hyde Park might be opened up. Along the greater part of the Brompton-road, from Sloane-street to the Museum, there are strips of waste ground actually bordering the road, and awaiting a mere levelling with pick and spade, and covering with road metal, to complete a spacious thoroughfare, to the great improvement of the adjoining house property itself; the owners of which, so far from presenting obstacles in the way of effecting it, ought to be glad to have it done, and aid in its accomplishment. All this we urged previous to the 1851 Exhibition; but, if the improvement were advisable then, how much more so now, that the road in question actually constitutes the main approach from the whole metropolis to the Exhibition building? The facility with which communication from Oxford-street and the Uxbridge-road might be opened up across Hyde Park, too, we have so often pointed out that all we need now do is express our great regret that it should be longer delayed. It would be like the opening of a road through the impenetrable bush dividing two populous colonies; for such really are the districts divided, as to public conveyance, by Hyde Park.

The only hope of this important diversion of the traffic which is certain to choke up the narrow way by Knightsbridge, during Exhibition time, rests between Mr. Cowper and the committee of parishioners appointed to wait upon him on the subject, and who have reported the result of their consultation with him. That result may here be given in their own words:—

"The committee, therefore, are unanimously of opinion that, as the first commissioner does not feel justified in giving up the land necessary for making the road; and as, when made, it would remain under the control of the first commissioner, and be limited to such traffic as he might consider expedient; the Government ought to provide the necessary funds.

As it is evident from the foregoing statement that no permanent road will be constructed without the sanction of Parliament; and as there is no probability under those circumstances of its being open in time for the Exhibition, the committee are strongly of opinion that some arrangements should be made for a temporary road during the season of the Exhibition of 1862."

As soon as the report was signed, a copy of it was sent to the chief commissioner; and after an interval of some days Mr. Cowper sent a communication to the special committee, in which it is proposed to construct the road forthwith, but subject to a toll to be levied until the cost of the road be defrayed.

---

Since the above was written, we understand the matter has been settled by the interposition of the Society of Arts, who will find the money by issuing debentures, and look to the tolls for reimbursement.

## KIMPTON CHURCH.

THIS fine Early church, which withstood the rude use to which it was put by the Parliamentarians, as a stable, in the seventeenth century, has just been re-opened, after having undergone extensive works, in the way of restoration and enlargement, since 1851.

The re-seating and perfect restoration of the chancel and private chapel were carried out by Lord Dacre, of the Hoo, in the parish. The re-seating of the nave and south aisle followed, through the exertion of the Rev. Frederick Sullivan, the vicar, with extensive works in repairs and the restoration of the internal walls and stonework, which was very much mutilated, and, in parts, unsafe. The old screens, with the chancel seats, are restored. The stalls were formerly richly decorated with paintings: the seven acts of mercy were found, which, unhappily, could not be preserved; but some earlier work at the east end of the chancel was discovered, and remains in an almost perfect state. Destroyers defaced with thick coats of whitewash all the coloured decorations; and over this, under the soffites of the arches, they stencilled in oil-colour the different characters of their playing-cards. Thus, even now, faint outlines can be traced of aces, clubs, hearts, and spades, which have so sunk into the walls as to defy removal without wanton destruction. The Commandments, as originally directed by the canon of Elizabeth, were found over the chancel arch. A few of the original encaustic tiles remained. These are re-laid, and the pattern preserved in the new tiles. The remains of a very singular cist, as is supposed, containing bones and wood within, were found in the churchyard, formed of embossed tiles, filled in with colour, somewhat resembling majolica ware, of beautiful design.

The wants of the parish requiring an increase of accommodation, a new aisle on the north side of the church has been built. Much remains yet to be done to the walling. The whole of the external masonry is in a sad state of decay. The chancel and nave are covered with flat modern roofs, plastered underneath; whilst the south-aisle roof, which is a good specimen of Perpendicular work, has undergone almost as much repair as it will bear. In order to obtain light, from the accumulation of the earth and the rising ground behind; and to secure pitch enough for the tile roof; it was necessary to carry up two gables in the north wall, which are each filled with windows of three lights, and two smaller windows between. A two-light window fills the east wall. The roof of this aisle is of fir, enriched with carving, and stained. The pulpit and prayer-desk are of oak, and handsome in design. A new font has been added, and the tower inclosed by a screen.

The work has been carried out under the direction of Mr. Joseph Clarke, architect; and executed by Messrs. Warren & Son, the contractors, of Hitchen.

## MEASUREMENTS AND TENDERS.

### THE SYSTEM PURSUED IN GLASGOW.

AT a meeting of the Glasgow Architectural Society, held on the 20th of January, Mr. Alexander Thompson in the chair, Mr. James Howatt read a paper "On the Art of Measuring, and its practical bearing on those concerned." He said the art of measuring was an ancient and honourable occupation; and an onerous occupation, too; as was taught us by the experience of more than a quarter of a century. Some men scouted the need of a measurer, and declared the fees paid to him as lost money, which was a mere cobweb covering a great truth. This idea should never be held by those about to build; as the employment of a measurer was the cheapest method of executing a difficult problem, and the surest method of arriving at truth. Another cobweb that might be easily brushed away was a feeling on the part of many that the duties of a measurer were very simple, and might be accomplished by any one. And it is not only the ignorant but the would-be wise who act upon this assumption. Mr. Howatt gave instances of inaccurate measurements to illustrate this part of his subject; and then proceeded to demolish another cobweb; which consisted in the assertion, sometimes made by those who seemed to be utterly ignorant of the amount of labour expended on measurements and estimates, that the fees were too large. He spoke advisedly when he said that many pieces of work did not pay for the actual time employed on them, much less remunerated them for the years of preparation and expense necessary to qualify a measurer for his duties; while in no case were they more than adequately remunerated. Without entering into details he would say that, in his opinion, the duty of a measurer in preparing estimates was to lay down broad and well-digested principles, which he must carefully and consistently carry out; and not, as in a schedule which very recently came under his observation, to have one principle for measuring a front wall and another for measuring a back wall. Were this done they would not have tradesmen saying that they must know the measurer before they could know the mode of measurement. Again, he held that, in preparing his measurement, a measurer must use the same care that the principles of the estimate be accurately carried out therein. A kindred feeling ought to exist between architects and measurers from the close connection of their duties; and a like feeling of respect should exist between measurers and contractors; neither the one nor the other usurping a position he is not entitled to hold. Finally, on this head he would say to all—architects, measurers, and contractors alike—in their dealings with each other, "be courteous."

Mr. Howatt then brought under the notice of the society the necessity of having for every building of any importance detail plans and a specification, which, it seemed to him, were quite indispensable to a proper and correct estimate. They all knew what mischief occurred when measurements exceeded estimates to any large amount, and the consequent difficulties in settlement. Sometimes they had plans so small and minute, that the lines (say in the cornice) must bear an unheard of weight of interest, and the stating a size and girth for these puzzle the most astute measurer. Yet according to such size and girth only was the contractor bound. The architect sometimes consulted these, and made his details to correspond therewith; but oftener, without any reference to them, he set his brains to work and made out the most elegant moulding he could. Now, were detail plans furnished for the more important part of the work, this would in great measure be avoided, and the constant outcry for heavy cube material in place of the lighter material supposed by the contractor to be required, would be put down at once, and the tantalising examination of blue ink prices very much avoided. He was aware that this was not always the architect's fault: he knew that some proprietors were unreasonable, and demanded plans which would require to be got up by types and steam, instead of by the creative genius of the brain and pencil. Nevertheless, if they (architects) set themselves to demand time for the proper execution of their work, and to show the loss proprietors would sustain by not having proper detail plans and a specification, they would gradually get this matter fixed in the public mind as something conducive to cheapness and comfort. Cases of violation of good taste in buildings, as well as the marring of particular forms consonant to the period the building is intended to represent, result from this,—not from any want of ability, but from want of arrangement at the commencement of the work. Moreover, this careful preparation of the plans would render unnecessary the great changes often introduced into buildings, which often placed measurements and estimates in contrast to each other. The terms used in specifications should also be clear and well defined. After throwing out some hints unfavourable to the employment of incompetent measurers, Mr. Howatt came to deal with the question of "no after-measurement." There were many difficulties to contend with in preparing an estimate from plans; but one great objection to "no after-measurement" was that it induced, on the part of the contractor, a niggardliness of material and workmanship that was plainly prejudicial to the work, as everything he could save was clear gain to him; while, in the other case, all contractors knew that any little more or less than the quantity provided in the estimate would be re-measured, and the value given. He had, therefore, no inducement to scrimp materials and work, being assured that the middle-man would give him what was the true meaning of the estimate in his after-measurement of the work. He would repeat that nothing could be more honourable, as between man and man, than a carefully prepared measurement, priced upon the basis of that agreed in estimate.

A very animated conversation followed. Mr. Honeyman considered that the present system of making contracts in Glasgow was in many respects highly objectionable. He complained that the schedule of quantities had been allowed to usurp the place of the specification. Practically, the specification was of no use except to guide the measurer; and the result was that many architects, including some of the highest standing, had discontinued making out specifications altogether; contenting themselves with merely giving the measurer some general instructions, and leaving the details in a great measure to his discretion. It thus happened that the contract was based on a document too meagre to serve the proper purpose of a specification, and yet in some respects so minutely specific that, according to the present system, it rendered the specification to all intents and purposes a dead letter; and hence many dis-

agreements, and extras in the final measurement. He was of opinion that the schedule should be simply a table of quantities; it being the contractor's, and not the architect's business, to see that it was sufficiently detailed to enable him to tender for the work in accordance with the plans and specification.

Mr. Wilson concurred with Mr. Honeyman in considering that the schedule, according to the present system, embraced either too much or too little. He thought it should merely give the quantities. He considered that the measurer stepped completely beyond his province when he described any portion of the work on his own responsibility. He thought such a course should not be tolerated.

Mr. Kennedy approved generally of the present system. He thought nothing could be fairer for all parties than the practice of remeasurement when the work was completed.

Mr. Hair, Mr. McCoard, and other contractors, complained of the want of uniformity in the modes of measurement adopted by different measurers, which often led them into mistakes, and was a constant source of annoyance.

It may be observed that the usual practice in Glasgow is this. The plans and specifications, or explanatory notes, as more generally happens, are given by the architect to the measurer; who, from these, prepares schedules of the quantities of the various works. These "schedules" are then issued to selected tradesmen, to be returned to the architect by a certain date, "correctly cashed and summed," and accompanied by letter of offer. In certain exceptional cases one contractor takes the whole work; but, as a rule, a separate contract is made for each department. Six may be regarded as about the average number of schedules of each department of the work issued; and the lowest offerer is considered entitled to be accepted. Each schedule contains the following clause:—"The work to be measured when finished, and whether more or less than now estimated, to be regulated by the prices contained in this schedule and corresponding slump sum in letter of offer." The said letter of offer forms part of the schedule, and it binds the contractor to execute the work "according to the plans and specification thereof, by ——, architect, *in conformity with and to the extent of the above estimate, for the sum of* ——." When the work is finished, it is again measured, and the contractor's account is made out in terms of the above provisions; and the measurement is generally twice as large a document as the original schedule. Such a system seems to open a wide field for carelessness, if nothing worse, in preparing the original estimate, and dissatisfaction when the cost is finally ascertained.

## SANITARY MATTERS.

*Wolverhampton.*—At the meeting before alluded to of the Wolverhampton Town Council, after considerable discussion, the resolution adopting a thorough system of sewerage for the town, at a total cost of 35,000*l.*, was agreed to; but with the provision that the works should not be commenced until January, 1863; and then to be proceeded with to an extent not exceeding the expenditure of 7,000*l.* a year. The town has been in a ferment for several weeks past, during which the "battle of the sewerage" has been fought at ward and other public meetings. The postponement of a vital work until the commencement of another year, and then extending it by paltry driblets over a period of five years, is scarcely warrantable in an important town like Wolverhampton.

*Winchester.*—At the usual weekly meeting of the Drainage Committee, the chairman said he could not pass over one monstrous misrepresentation which had been publicly made as to the healthiness of the town; namely, that "the mortality for five years past has been but 18 in 1,000 of the population!" Now, this period of five years is just that for which "the gentleman holding a high official position in this city" obtained the facts published from the office of the Registrar-General. They would scarcely believe those facts show the mortality of the five past years to have been 22 per 1,000 instead of 18, as the adversary of sewerage asserts. Such, however, was the actual truth. On his statement, the deaths in 1856 were 1 in 45; in 1857, 1 in 45; in 1858, 1 in 42; in 1859, 1 in 40; and in 1860, 1 in 55. The average of those five years was, therefore, 1 in 45 2-5ths, or about 22 per 1,000. He would leave it to the committee to judge whether such a misrepresentation as that was pardonable. *The Medical Circular* draws a sickening picture of the state of Winchester as a city "filled with stinking cesspools, the contents of which ooze up under the hearthstones, and exhale their fœtid effluvia into the atmosphere." The Hants County Infirmary, which stands in this city, is in a state of dilapidation, and defective in accommodation; penned in with dwelling-houses; undermined with cesspools; and cannot be drained except upon a comprehensive plan, that shall embrace the sewerage of the entire city. The patients are consequently placed under the most unfavourable conditions; and the medical officers, one and all, complain of the disadvantages of the building, and particularly insist upon the paramount necessity of improving the drainage. The Court of Governors, therefore, have just held a meeting, at which they have resolved to remove the hospital out of so filthy a town, and have appointed a building committee to see to it. The cost of an efficient system of drainage, as remarked by the *Hampshire Independent*, would be the merest trifle, compared with the loss the people of Winchester must ultimately sustain if they persist in their present course of obstinacy and folly.

*Salisbury.*—At the meeting of the Winchester Drainage Committee referred to above some statistics as to sanitary progress in Salisbury were brought forward. These statistics show that previous to the drainage of the town the number of deaths was 27·7 in 1,000,—amongst the worst in the kingdom; while since the drainage was carried out the mortality has been less than the average of the whole kingdom, having last year reached no more than 14·6 in 1,000, which is actually below that of the healthiest agricultural district. And this, be it noted, cannot be a mere accidental coincidence of low mortality with drainage because the result is general and frequently occurs in cases of efficient drainage. The drainage of Salisbury cost 13,000*l.*, and the water-supply 14,000*l.*; and the whole is paid up by a rate of 1s. 3d. in the pound.

*St. Helier's (Jersey).*—It will not be pleasant tidings to those who like Jersey as a place of sojourn, that typhoid and typhus fevers have been prevalent for some time at St. Helier's, and this, according to the *Jersey Times*, without a single step having been taken to get rid of it permanently. There is, it appears, an absurd multiplication of offices in the same individual, and to this is ascribed the neglect, as well as to ignorance. The state of the hospital, too, must be very bad, since more than 33 per cent. of the fever-patients have died there, while only 8·33 per cent. have died when treated at their own homes by the dispensary medical officers. The high rate of mortality in the hospital, however, has had no influence as yet in inducing the establishment of even a separate hospital for fever patients. In the comparatively small town of St. Helier's there have been, it is said, nearly 400 cases of typhus fever, or a new one every day, during the past year.

## PROVINCIAL NEWS.

*Reading.*—The new borough police buildings are now approaching completion. Considerable disappointment, says the local *Mercury*, has been felt at the defect in the large hall of the new assize buildings, which renders it unfit for any public meetings. On the occasion of the county meetings for passing a vote of condolence with her Majesty the Queen, the echo was so great that few could distinctly hear what was said by the different speakers.——The windows, frames, and glass have now been put into the Abbey Gateway, and they improve its exterior aspect. The old timber which was taken out of the building when being pulled down, some of which was of immense thickness, was found to be in an excellent state of preservation, beautifully grained, and almost as hard as iron; and required great labour to cut it up and refit it; but the work was successfully carried out by Mr. Matthews, builder.

*Reigate.*—The new public hall has been opened. It stands on the south side of High-street, and is in the Gothic style. The material is native firestone (presented by Lord Monson from quarries on the Gatton estate), having Bath stone dressings, relieved with various coloured bricks. The façade to the High-street comprises the principal entrance to the hall and corridor, with a shop on each side. The main hall, which is capable of holding 500 persons, is slightly raised above the street level, and is 70 feet long, 35 feet wide, and 36 feet high, and has an open roof, the main timbers of which are in sight. It is lighted by twelve windows, the upper part of each filled with metalwork, and made to open, for ventilation, upwards of 20 feet above the floor. There is a timber gallery at the north end, approached by a staircase without entering the hall. The warming is provided for by two of Pierce's pyro-pneumatic stoves, which supply warm air. The gas-lighting is by means of a number of small pendant star burners. A corridor extends along the west side of the hall, to which it communicates, affording access to the ladies' retiring-rooms and the lecturers' or anteroom. A staircase leads from the entrance-hall to the ground-floor, which is 13 feet in height, and comprises mechanics' institution, with class-room; a museum, and Freemasons' lodge rooms; the three large rooms being each 35 feet long and 21 feet wide. The whole of the interior woodwork is executed in yellow deal, slightly stained and highly varnished. Mr. William Carruthers, of Reigate, was the builder; and the designs were prepared by Mr. John Lees, of Reigate, architect. The cost was about 3,500*l.*

*Cannock (Staffordshire).*—On the 16th, the new public rooms, a structure erected under the superintendence of Mr. Johnson, architect, were to be opened by a *soirée*. The building contains a room capable of seating 400 persons; a smaller one, which will accommodate 150; a library and reading-room; and a ladies' waiting-room.

*Stoke-on-Trent.*—The medical committee of the governors of the North Staffordshire Infirmary having felt it desirable, from the unhealthiness of the present site, and the fact that the building is cracked and undermined, to erect a new infirmary, the general committee advertised for a site of ten to twenty acres, and selected a piece of ground near the "Mount," and adjoining the road from Stoke to Newcastle, which was offered for 300*l.* an acre, and recommended it to the governors for purchase. At a recent meeting the governors received the report, but resolved that it should be printed and distributed to each governor; adjourning, meantime, for two months.

*Stockport.*—The following is a statement, from the local *Advertiser*, of the weights of the various materials used and removed in the construction of the new covered market:—

| | Tons. | Cwt. |
|---|---|---|
| Earth removed | 560 | 0 |
| Stone | 143 | 0 |
| Brickwork | 25 | 0 |
| Pipes and brickwork, &c. for sewers | 106 | 0 |
| Boulders taken away | 500 | 0 |
| New setts | 54 | 0 |
| Cast and wrought-iron | 136 | 0 |
| Timber | 52 | 0 |
| Slates | 71 | 0 |
| Glass | 15 | 0 |
| Tiles for floor | 197 | 0 |
| Stench traps | 1 | 12 |
| Paint | 1 | 10 |
| Total | 1,862 | 2 |

*Birkenhead.*—The Wallasey music-hall, at the corner of Claughton-road and Atherton-street, is a parallelogram with a frontage to the former of 52 feet and the latter of 112 feet. There are four principal entrances, two to Claughton-road, one to Atherton-street, and one for the musicians, performers, and officials, communicating directly with the different parts of the building, platform, &c. &c. A covered porch, approached by a flight of steps, leads to a vestibule on either side, communicating with the entrance hall and grand staircase. Midway in the hall is a corridor leading to the supper-room, which is 48 feet by 30 feet, and of proportionate height. It is quite free from pillars or other encumbrances. On either side of the corridor last named are cloak-rooms, each supplied with lavatories, conveniences, &c. Adjoining the supper-room is a room designated the serving-room, the purpose being that of an ante- or butler's-room. The grand staircases at the entrance-hall consist of a double flight, one on either side, the bannisters of iron, with the monogram B M H interlaced in the foliage. These lead to the upper hall or anteroom leading to the great hall. The great hall is approached by two doors of great height. The great hall platform is raised, and will contain fifty of a chorus and thirty-five musicians, in addition to the pianist and principal singers in front. The style is Romanesque. The great hall is lighted by three sun-burners of sixty-three lights each. The building is warmed by an apparatus on Dr. Arnott's principle. The decorations were supplied by Mr. Dawson, of this town, lately the managing assistant of Herr Sang, of London, who decorated the Royal Exchange, Carlton Club, and other principal metropolitan buildings. The design was selected out of those by sixteen competitors, and the architect was restricted to 4,000*l.*, which included the lighting and warming, the decorations, and the architect's commission. The architect was Mr. Walter Scott, of Liverpool; and the builder, Mr. J. Hogarth, of Rock Ferry.

*Scarborough.*—It is in contemplation at Scarborough to erect a large hotel, club, &c., on the east side of St. Nicholas's Cliff. The probable cost

of the building is stated to be 87,000*l.* at the most; and this sum will include not merely the cost of a hotel, with every modern improvement, but also the price of the site, the cost of extensive club and billiard-rooms for visitors and residents, similar to those at Bath, Cheltenham, and other places of fashionable resort; the decoration and furniture of such hotel, club, and billiard-rooms; and a terrace carried forward to the foreshore, under which will be erected a row of some fourteen three-storied houses and shops. Should a limited company be formed to carry out these improvements, 100,000*l.* is the most amount of capital that will be created, and the greater portion of this sum is already provided.

## SCHOOL-BUILDING NEWS.

*Long Ashton.*—The new range of National school buildings just erected in the village of Long Ashton has been formally opened. The site is about half a mile beyond the parish church. The architect was Mr. James Wilson, of Bath. The building is in the Early Decorated style, of Nailsea pennant stone, with freestone dressings; and comprises dwelling-house for the master and mistress; a boys' school, 50 feet by 20 feet, capable of accommodating 100 boys; a girls' school, 46 feet by 18 feet; and to each school is attached a class-room. The boys' school has an open roof, and is lighted with seven triplet windows, and a circular window filled with stained glass. The girls' school is also open-roofed, and is lighted with three triplet windows. The boys' school is surmounted by a bell-turret, supported by four Purbeck marble columns, with carved capitals. The whole of the work has been carried out by Messrs. E. & J. Tucker, of Long Ashton, builders. The cost of the building was 2,200*l.*; and it was opened free of debt.

*Wattisfield.*—In answer to an advertisement for tenders for building the parochial schools at Wattisfield, eleven tenders were received, ranging in amount from 380*l.* down to 306*l.* The tender of Mr. Fake, of Bury, for 320*l.*, was accepted; the estimate of the architect, Mr. Johnson, of Bury St. Edmund's, being 350*l.* The general plan comprises a school-room, 33 feet 6 inches by 17 feet, to contain sixty scholars; having two fireplaces so placed as to admit of the room being divided by a curtain or otherwise, between the boys and girls; a class-room, 11 feet by 10 feet, with gallery to hold two classes; and two lobbies for boys and girls, which are obtained by the school roof being continued down between the projecting class-room and teacher's residence; which latter, however, is not to be built at present, in consequence of the want of sufficient funds. This lean-to roof is broken by an ornamental bell-gable. The school-room is lighted by five dormers in the roof and a two-light window at the east end. The class-room is lighted by a two-light window to the west; each lobby having a small window; all of which will be glazed with Hartley's patent quarry glass. The roofs will be open-framed in deal of high pitch, stained and varnished, and plastered between the rafters. The design, in the early fourteenth century character, is to be carried out in red bricks with white brick dressings.

## STAINED GLASS.

*Wrotham Church.* — Another new memorial window has just been erected in the parish church of Wrotham, at the west end of the north aisle. It is of two lights, and the facsimile of the old one, which it replaces; the stone work being executed by Messrs. Sutton & Vaughan, of Maidstone. The subjects are the Raising of Jairus's Daughter and the Parable of the Ten Virgins, both by Messrs. Hughes & Ward, of London. In the quatrefoil above is a group of three angels, the centre one bearing a scroll on which are the words "Blessed are the dead which die in the Lord." In the tabernacle work, the figures of the Four Virgin Martyrs—S.S. Cecilia, Agatha, Perpetua, and Catherine, are introduced. The window is the gift of the rector's family.

*New Church, Bramcote (Notts).* — A stained glass window has been executed by Messrs. Heaton, Butler, & Bayne, of London, for the recently-consecrated church at Bramcote, in memory of the late Miss F. T. Longden. The subject of it is the Crucifixion, with the figures of the Three Maries and St. John on either side. It was erected for Mr. Sherwin Gregory.

*Chester Cathedral.*—The two windows which it was resolved to erect in the south aisle of the cathedral, to the memory of the late Canon Slade, are now finished. It was proposed to illustrate the Old and New Testament dispensations, more especially with reference to the calling and practice of the two ministries. One window, accordingly, is filled with subjects from the Old Testament, and the other with subjects from the New. Those in the Old Testament window are—1. The dedication of Samuel to God; the panel beneath containing a representation of the altar of burnt offering. 2. Samuel called by the Angel to minister, and coming to Eli; beneath, the priest offering the various sacrifices. 3. The gift of the spirit of prophecy by Elijah; beneath, the Angel touching the lips of the Prophet with a live coal. 4. The reward received by Elijah in being taken up to heaven before death; beneath, the special care of God over his people, in Elijah being fed by the ravens. The New Testament window has—1. The baptism of our Saviour; beneath, Christ blessing little children. 2. The Sermon on the Mount; beneath, our Saviour in prayer. 3. Christ delivering the charge to St. Peter; beneath, the baptism of Cornelius the Centurion. 4. The pastor's final reward, our Saviour conferring the crown of glory; beneath, St. Paul preaching,—the lower compartments thus typifying respectively Blessing, Prayer, Baptism, and Preaching. The windows were executed by Mr. Wailes, of Newcastle-upon-Tyne. The Dean and Chapter provided the new tracery of each window. This aisle, in place of the debased style of windows which it formerly had, is now filled with adaptations from the Decorated windows of St. Oswald's. Mr. Wailes was paid for the windows 300*l.*

## CHURCH-BUILDING NEWS.

*Bromley (Middlesex).*—The mission church and national schools of St. Michael and All Angels, Bromley, were opened by the Bishop of London on the 28th of December last. The building is 78 feet in length by 35 feet in width, and is in the Pointed style of architecture, with an open-timbered roof, divided into six bays, with principals and ribs springing from stone corbels of varied design. The whole of the timbers and boarding of roof are stained and varnished. The height of the edifice is 42 feet from floor to ridge. At the south end on either side is a large class-room communicating with the principal room by folding partitions and doors, which are thrown open for Divine service, and give a total accommodation for 650 adults and 350 children on the week-day. The west class-room is fitted with a children's gallery. Adjoining the east class-room are a vestry with porch, lavatories, and conveniences, which latter are fitted up with Kinniple's patent apparatus. There is an entrance with porch at the north end of the main room. The buildings are of brick with ornamental string courses in red bricks. The arches to windows are in coloured gauged bricks of varied designs. A bell-cote rises from the side of the south gable, surmounted by a gilt cross. The walls, internally, are lined with white bricks and pointed, relieved with coloured brick gauged arches to windows and recesses. The recesses on the eastern side (from which no light could be procured) are filled up with the Beatitudes, from the Sermon on the Mount, painted on zinc by Mr. Castell, of South-Molton-street. Bath stone is used for mullions to windows, copings, water-tables, &c. The floor of the principal room is paved with wood by the Metropolitan Wood-paving Company. The room is heated by one of Gurney's patent stoves, and lit by two large sunburners made by Mr. Evans, of London Bridge. The whole has been carried out under Messrs. Morris & Son, of London, architects, by Mr. Brown, of Ratcliff, builder, at a cost, including all fittings, of about 2,200*l.*, exclusive of the site.

*Crayford (Kent).*—The church of this place was re-opened on the 1st of the new year, after an extensive restoration and reseating, under the directions of Mr. Joseph Clarke, the diocesan architect. This church was before restored by Sir Cloudesley Shovell, the famous admiral; a great fire, happening in his time, doing considerable damage, and leaving traces which were found in prosecuting the present works. Originally a Norman church existed on the site, with conventual or other ecclesiastical buildings round, the foundations of which were found, and remain under the present floors. There was, then, no doubt a church of the usual arrangement, with a nave and aisles; but in later times these disappeared, and the space between the outer walls, north and south, was equally divided, and a third Pointed arcade built, thus forming two naves. The original Third Pointed chancel, of which portions remain, was left with the singular and almost unique arrangement, in England at least, of a central row of shafts with the last half arch of the arcade dying or butting on to the hall, over a low depressed chancel arch. Considerable traces of the original work remain; and these, we understand, have been preserved. Very little traces of colour were found, but some singular models of small shafts, with bases and caps, in gypsum, or a coarse kind of plaster, of Early Third Pointed work, turned on a lathe, were found, built in, in the centre of a Third Pointed wall, showing they had been used as a guide to the workmen in cutting the orginal masonry, as is supposed, of the sedilia. The greater part of the internal masonry has been restored; and the whole church, including the Draper and south chapels, wherein some of Sir Cloudesley Shovell's family are buried, re-seated with benches. The floors have been levelled. All the vaults, of which there are many, are ventilated by a series of pipes carried through the walls, and the whole surface covered with concrete. The masonry of the east window is new, and filled with stained glass, by a lady in the parish, executed by Messrs. Ward & Hughes. Another window in the north aisle has been filled with glass by Messrs. Clayton & Bell, the gift also of a lady. A new font has been presented. Messrs. Price were employed for the heating, and a new clock, by Benson, has been added. The gas fittings are by Messrs. Skidmore, carried out in a novel manner. The cost of the works will amount to 1,500*l.*, and they have been done by Messrs. Miles & Melton, of Dartford. The exterior of the church, with the roofs of the double naves, is left for future restoration.

*Wrecclesham.*—On New Year's-Day the church here was re-opened by the Bishop of Winchester. The enlargement will add about 100 sittings to 360. The interior has been transformed by the rebuilding of the chancel, which has been lengthened considerably, and by the building of a new south aisle, separated from the body of the church by Gothic columns and arches. The pews have been remodelled, a new pulpit and reading-desk provided, and an organ, by Bryceson, replaces the harmonium formerly used. The cost of the whole, exclusive of the organ, is 780*l.*, of which 630*l.* have been raised. Mr. Howell, of Guildford, was the architect employed, and the work has been executed by Messrs. Goddard, of Farnham.

*Salisbury.*—Workmen have been engaged in erecting a scaffolding between the four columns which support the tower and spire of Salisbury Cathedral, for the purpose of enabling Mr. Scott to examine the several parts of the structure, in order to ascertain the best means of repairing and strengthening it. It has become necessary to expend, in repairs and in effecting improvements conducive to the security of the fabric, a sum amounting to 10,000*l.*, or thereabouts; and this sum is to be provided and expended by the commissioners, under the superintendence of, and according to plans and specifications to be prepared by, the architect of the dean and chapter. It may be remembered that the spire of this cathedral, which is 400 feet high, has for years past been some 22 inches out of perpendicular; arising, it is supposed, from a settlement at some distant period or other; and that the tower and spire were not a part of the design when the edifice was first built. It is thought that their erection was the "improvement" for which the materials of Old Sarum were used by virtue of letters patent granted by Edward III. to Bishop Wyvil and the dean and chapter in 1331.

## PUBLIC MEMORIALS.*

I AM going to ask your attention to a few remarks on a subject both of professional and national importance. I need not, I think, take up your time in proving that such is the case.

By no works is the state of art in a country more judged of by foreigners visiting our metropolis, than by the last new statue, column, cross, or any other form of memorial set up in our streets.

No work of art is more sure to be sought out and visited by strangers and foreigners than is the memorial, of whatever kind, that has been recently erected as a testimony of the respect and gratitude of the nation, to a great and good man, known not only in this country, but all over the continent, or, perhaps, throughout the world.

Every one that has heard of him (and, perhaps, many have much admired his character, and taken a daily interest in his actions while he was living) is sure to be anxious to see what sort of memorial has been reared in honour of him.

* A paper read by Mr. Randall Druce, before the Architectural Association, on the 17th of January.

Is it worthy of the man to whom it is erected? Is it worthy of the age which he helped to enlighten and improve? Is it calculated to keep in the minds of those who see it his character, circumstances, and history? If to celebrate an event, and not an individual, does it do so worthily and distinctively? Does it, in fine, as much as possible fulfil in every variety and particular the objects that such a memorial ought to and might fulfil. Such questions, varied as the individuals who gaze at them, but mostly to such end and purpose, either pass silently through the minds, or are given audible expression to by the different classes of spectators; and, according to the answers given to them by the memorials themselves, are the opinions of the thinking men of the day in all countries to a very large extent affected, as to the state of art in the country, and as to the capacity of the people for producing great works of art.

Independently of the public attention naturally called to works of art of this kind by their association and connection with men of, perhaps, continental reputation, or with events of, perhaps, international importance, public memorials are more open to public criticism, and more liable to be taken as examples of the art-progress of the country, because the sites that are or ought to be chosen are naturally the best known, the most public, and the most conspicuous,—the public square, the public gardens, the public parks: they stand out in front of the public buildings, may be the only object of art in a public park, or erected on the only resting and breathing place in a public crossing in a public street.

But wherever placed they are always objects of curiosity and interest, for some time after their erection, to the inhabitants of the city or town in which they are erected. And to foreigners and other visitors to that city or town, they become from henceforth special objects and things that must be seen, as long as that city lasts. Is it not so with such memorials abroad and in our own country towns that have not been before visited in the minds of those whom I am now addressing? Do not the memorials in the public streets or in the churches have much to do with the character for art given, by each of you, to the country or town you visit? If so, it is an important subject, both to the profession and to the nation. I will endeavour, therefore, to lay before you the principal things that I consider necessary to be thought of and kept in mind, both in selecting and designing public memorials. I think that the designs for public memorials should always be selected by public competition, by which I mean one open to all the country, and not a limited one, in which some half dozen men are invited to compete.

I have been led to this opinion for the following reasons:—That public memorials, as usually erected, have the special peculiarity of being on a debateable land, between architecture and sculpture, and properly belonging to both; that, therefore, an open unlimited competition has the advantage of putting before the promoters of the scheme in a clearer and a more impartial way than any other mode the respective merits in that particular case of the treatment of the subject in view, either in an architectural or a sculptural manner, or architecturally designed, combining both; that it affords to those who are to have the management of it and the selection of the mode of carrying it out the opportunity of receiving suggestions as to the peculiar fitness of some particular selection in a special case,—happy suggestions, perhaps, that may altogether alter the mode in which the money subscribed is to be spent, and yet more fitly show respect to the memory, and hand down to posterity the peculiar characteristics, of that peculiar man, than any other mode that could be devised.

I think it well that the committees in these cases—but in these cases, of course, only—should not too closely specify the peculiar mode of structure that they propose to raise.

I say that the precise kind or form of building should not be too closely specified only for this reason, because I am of opinion that, were the question, whether architectural or purely sculptural memorials should be selected, decided after receiving the designs, and not before, in a short time those erected for the future would be much improved, and we should have a much greater chance of seeing in them that happy mixture which we now seldom see, and which I cannot but think desirable.

Public memorials may consist of any out of a great variety of structures; many buildings that are not necessarily so in themselves becoming so by being selected as suitable in peculiar cases; and few of us can otherwise than think that in raising some useful institution or public building, devoted to a special purpose, but of a nature to be useful to and promote the prosperity and well-being of the nation at large, the respect and gratitude of the nation are better shown than in any other way;—that in this way, more than in any other, are the peculiar merits, peculiar labours, and peculiar character of the man recorded to whose memory and honour it is erected.

Can you better honour and show forth the peculiar character, labours, and merits of a scholar than by founding a school or college, and calling it by his name?—or a philanthropist or public benefactor than by founding an hospital, baths, or other building of public use and benefit?—or by furthering in any manner the same objects which he in his lifetime laboured to advance in his native town, or the town in which he dwelt, and which he loved to improve and benefit, or in a place in which it is more wanted,—a deviation from the ordinary rule which you know would be in accordance with the spirit in which he acted when he was alive?

So we will first consider the peculiar modes of treatment necessary to be kept in mind in this mode of raising a memorial to a public man by raising a building and institution of the kind that most harmonizes with his tastes, objects, and labours during his lifetime.

In this case we must take care not to lose sight of the special object of the founding, in the useful objects of the building. A statue of the person to be kept in remembrance should be placed in a conspicuous position in the building; and in the lower portions bas-reliefs should be introduced where they can be well seen; representing his struggles, his labours, and the peculiar good he did; and the interior may very appropriately have among its decorations views of the house in which he was born, the places most associated with him as the scenes of his successes or his useful labours; while other frescoes on the walls may be well filled with a series of historical scenes in which he acted a prominent part. While, if he was a successful inventor, or helped materially to develop or improve some useful branch of manufacture, illustrations of the peculiar invention, peculiar mode of manufacture, and representations of the particular art-manufacture produced, may, if skilfully treated, help to fulfil the historical and memorial purposes of the building, and also to vary and enrich its decoration.

The commemoration of any great and good public man by a single statue representing him, executed in either marble or bronze, and placed on a pedestal, is a custom which we find among the Greeks and Romans, and which we have derived from the Renaissance architect, who revived the custom of the Romans with their architecture.

In the various museums at home and abroad, we find some very beautiful examples of such, of emperors and citizens, graceful and dignified; mostly, however, by Greek artists.

In the Museum at Naples are some fine examples of Roman equestrian statues. The Renaissance sculptors took these as models; as, for instance, Donatello is said to have taken the celebrated bronze equestrian statue of Marcus Aurelius, in the Capitol at Rome, as his model for his fine statue of Erasmo da Narni, commonly known as Gatamelata, executed for the Signoria of Venice, about 1450.

This was the first equestrian statue of modern times: a cast of it is to be seen in the Crystal Palace. It is a fine example of its class, and one well worthy of study. Our own Charles I. is another early and fine example; as is, also, the pedestal of the artistic treatment of that important member of this form of memorial.

This designing and treatment of the pedestal is one of the weakest points in our modern sculpture memorials. Sculptors, at the present time, seldom or never being employed as architects; and, therefore, not considering it necessary to study architectural composition, as did sculptors in the Renaissance times; their pedestals generally show this, greatly to the detriment of the whole composition.

As commonly erected in our squares and streets, a single statue on a pedestal, without anything on that pedestal to indicate what the occupation, attainments, and achievements of the person represented were, always appears to me but a bare and empty way of commemorating a great man, or of representing the creative art of the country. I would at least add four bas-reliefs to it, if nothing more could be done; and in these four bas-reliefs much could be shown, of why the statue of that man was raised on the pedestal. Thus enriched and increased in value as a memorial structure, a naturally and yet majestically designed statue is, when placed on a really beautiful and elegantly-proportioned pedestal, a graceful and pleasing ornament in the public street.

What a pity that so fine a statue as the Richard I., of Marochetti, should be on so miserable a pedestal. Let us hope that the English copy of Foley's Hardinge will be placed on a pedestal more worthy of so great a work. A pedestal for an equestrian statue requires to be much higher, more important, and of a much bolder character than that at Westminster.

But as the principal ornament in a large space, a single statue on a pedestal is not sufficiently important, and something more of a structure is naturally called for; and then come very conflicting opinions as to what should be erected. Some have been brought up with the idea that nothing is so fitting as an obelisk, which we derived from the Egyptians, who did not, however, themselves use them for this purpose; but, being precious on account of being monoliths, and on account of the cost of working and the cost of transport and raising in their places, they were accounted worthy of being dedicated to the gods, and their four sides contained the inscriptions setting forth the name of the king who dedicated them and the deity to whom they were dedicated. The Romans who transported them from Egypt were the first to use them as memorials or pillars of victory. But many, even now, seem to consider that they are the very thing, and that very thing is very often erected; but I must say that, with all respect for the ancient Egyptians—and a very great respect I have for them—though a grand object on certain sites, I am always sorry to see them erected in this country or in other countries for our national memorials; and the votaries of these massive remembrancers seem to me to admit their weak points by adding to them all sorts of devices which have little other effect than that of diminishing their grandeur.

If really elegantly designed and completely carried out, another very favourite form is grand and appropriate, although in its usual form objectionable from being a member of a building diverted from its original use: I allude to the single column with or without statue. The use of this and kindred forms for this very purpose is of very ancient date. In India, we find pillars with very beautifully-executed capitals, and surmounted by a lion, erected by Asoka in the middle of the third century B.C., commemorative of his having adopted the Buddhist religion, and containing the creed and principal doctrines of Buddhism. Feroze Shah re-erected one of these as a pillar of victory at Delhi. They are monoliths. In Cabul are two built examples of pillars, rudely imitative of these, probably Buddhist monuments, commemorative of some sacred spot or great event. In Roman times we find them in the form of columns, similar to those used in the support and decoration of their temples, but with this difference, that several of them were ornamented with sculpture. At Alexandria was one erected by Diocletian; at Arsinoë by Alexander Severus, and at Mylassa. All these were Corinthian.

In Rome, herself, are two of the Doric order,—that of Trajan and Marcus Aurelius. There is one shown in Mr. Fergusson's "Handbook" of a very elegant and suggestive form. The shaft is ornamented with a scale-like pattern of leaves, and its base is surrounded by eight statues: it is at Cussi, near Beaum, in France, and probably belongs to the time of Aurelian. Very near akin to these, and capable, I think, of more beauty, as well as being free from the same objections as the pillar, from being an essentially supporting member wrongly used when isolated, are towers which, from very early date, have been used for this purpose; that is to say, as pillars of victory;—in India, by the Buddhists, the Jains, and the Mahommedans; and found erected by the latter wherever their Saracenic architecture prevailed, especially in those countries where the custom had originally existed. At Chitore, in India, is a remarkably-beautiful example of these towers, or pillars of victory, built in later times by the Jains. It was erected by Khumbo Rana, to commemorate his victory over Mahmoud of Malva, in the year 1439.

In China we find the pagodas erected as memorials. The celebrated porcelain tower at Nankin was erected in 1412, as a monument of gratitude to an empress of the Ming family. It is octagon, and 236 feet high, and owes its beauty of effect almost entirely to the brilliancy of the coating of porcelain, with which both the walls and both sides of its projecting roofs are covered.

The second bar pagoda on the Canton river is also commemorative. It is a pillar of victory

erected to commemorate a naval victory; so that we see that pillars and their kindred forms have been both used from very early date for this purpose, and also in very widely-parted and different countries; and the Roman examples have been copied or taken as types of many similar memorials in Paris, and all over the Continent.

In Byzantine times we find them used at Venice, in front of the Doge's palace; and I remember a very beautiful little example of Italian Gothic work in one of the streets of Florence, supporting four canopied niches filled with sculpture.

I do not think that in this country we have been happy in our adaptations of the Roman form; not that they are allowed to have a fair chance, for who ought to judge of the merits of a structure till it is finished? and our Nelson column still lacks its lions. When shall we see them? May they indeed be lions worth the trouble of ladies and gentlemen walking up to see when they do come.

But as long as the Classic style was the only one in which this—in itself certainly good and appropriate form of memorial—was supposed to be admissible, it was difficult to do much that was original, or differing much from those already erected: but now, many thanks to a recent example set in this metropolis, we are set free, and columns as varied as the columns in our different churches and other buildings may, at least, take their turn with other forms of memorials; and with their pedestals, ornamented by bas-reliefs, or supporters—animals, may be, or figures, bases, bands, capitals, and crowning figure, give great scope for skill in design, taste, and sculptural execution. A picturesque form is to be found in Switzerland, which I think is worthy of study: it is a short massive column, with carved capital, supporting a statue of some local hero, standing in the centre of the round or octagonal basin of a fountain or conduit, suggesting the useful combination, in the streets of our towns, of memorials and drinking-fountains.*

## THE SHEFFIELD SCHOOL OF ART.

THE annual *conversazione* of this school has just been held. It was quite as successful as in former years, though the show of oil paintings was less numerous than last year, when it received valuable accessories from Mr. Gillott, of Birmingham. Lord Wharncliffe's contributions, brought by his youngest brother from China, of part of the spoils of the Emperor's Summer Palace, were very curious and valuable. His lordship presided, and read an agreeable address. The prize drawings of the students, and the number of prizes awarded, attest the success with which the work of the school is prosecuted by Mr. Young Mitchell. It was stated that under his care the students have increased from 200 to 1,200.

Lord Wharncliffe, in the course of his address, referred to the aptitude of the nations of the east for colour. If we are wishful to ascertain who were the nations surpassing all others in their skill of grouping or contrasting colours, we must not look to ancient Greece or Italy, but further still, and perceive in the Eastern nations those who have attained to the greatest knowledge of the treatment of colour, particularly in their designs for textile fabrics. Unable to draw correctly, as they almost always are, yet they appear to have an intuitive acquaintance with the principles of colouring, and to apply them with a boldness and success to which European nations cannot attain. Who has not been struck with the profusion of colour, yet perfect harmony of it, visible in all manufactures imported from the East—and then been surprised at the miserable, crude imitations of them attempted both in France and England. When I was in the lovely and romantic vale of Cashmere, in 1854, I became the purchaser of several shawls for myself and friends. The merchant from whom I bought them, Hadji Sahib by name, produced some numbers of the *Art Journal* as being the source whence he drew a large number of his designs; but the colour in which they were to be worked was left to the taste of his Hindoo weavers. If we go still further East, to a country now happily on a better footing with us than it has ever been before, we see that although the form and taste in art are grotesque, yet that there are signs of extensive former knowledge of ceramic art, as also that of enamelling. You will find among the various objects of interest presented to your inspection some very large and magnificent copper enamels captured at the Summer Palace in Pekin, and brought to this country by my youngest brother, who was on Lord Elgin's staff.

Mr. Cole, while alluding to the art collection in the school, said it included one article whose possession by the nation might be looked upon as a culminating instance of the growth of the love of art in the last ten years. It was a piece of metal-work in the shape of a candlestick, for which the Government had recently given 1,200*l*. It was a very grim-looking specimen, but it derived its value from the fact that it was perhaps the earliest ornamental work in metal which was known to exist in this country. It was made in the twelfth century, for Gloucester Cathedral. It was carried off by Thomas à Becket into Normandy, and remained there until the French revolution, when it was sold, and passed into the hands of various French dealers. From auction to auction it was passed on; and, within the last four years, it sold for 800*l*.; but, within the last four years, he was happy to say that the English Government had had the courage to bid against that of France; and the candlestick was now permanently secured to England. He believed the Sheffield school was the second where this work of art had been exhibited. He recommended the workers in metal to avail themselves of the opportunity to examine it before it was removed. He regarded the manner in which that work of art had been acquired as being very satisfactory; because, ten years ago, a minister would almost have looked for an impeachment if he had spent 1,200*l*. in an article which was to be devoted to the public instruction. In his reference to Mr. Sykes as a Sheffield student, he said he was sorry Mr. Sykes was not as sound in body as he was vigorous and genial in intellect, and that he was obliged to go to Italy for the benefit of his health. He felt a real pride and gratification to know that if there was any name amongst their art-students which was likely to be handed down to posterity, it was that of Godfrey Sykes. He could confidently say that during the last 300 years there had been produced no works finer in character or exhibiting more genius than those terra-cotta columns which Mr. Sykes and two fellow-students of Sheffield had modelled, and which may now be seen in the Royal Horticultural Gardens in London. In these works of art there was found another connecting link of the late Prince's influence. During the progress of those very works, his Royal Highness would often go down to Mr. Sykes's studio, and would not merely offer suggestions, but would, as though he were a worker himself, take the modelling-tool or the paint-brush and endeavour to demonstrate his meaning visibly in lines before the student. The speaker said he sincerely believed that the loss of the Prince Consort to art in this country was as great as the loss of Henry IV. to Protestantism in France.

* To be continued.

## WORKMEN'S HOUSES OUT OF TOWN.

IF you will allow me, I should like to call attention to a subject in which I know the *Builder* has always taken an interest,—I mean the improvement of workmen's homes. I believe it is intended, next spring, to try the experiment of building cottages a short distance in the country for the London workmen, to and from which some of the railway companies have agreed to take them, if there are as many as 1,000, at the rate of 2d. per day. If this experiment should succeed, and be found to pay, as I hope it will, I think it will be a very great benefit to the working classes, and will be highly appreciated by them.

Perhaps there may be some little difficulty in finding out whether the 1,000 tenants for which the railways stipulate would be forthcoming, in case the houses were built: if so, it might be met by having an office at which those who wished to take houses might bespeak them. If I may judge by the manner in which I have heard the scheme spoken of, I should say that 1,000 would very soon be wanted. As a suggestion, I would ask, might not the railway companies build the houses themselves, and include the fares in the rent? Even then, the rent would be less than must be paid for two rooms in any respectable part of central London.

I have just been reading Mr. Roebuck's recent lecture "On Popular Education," in which he institutes a comparison as regards comfort and happiness between the home-lives of the brain-workers and hand-workers,—or, as he says, between the educated and uneducated classes,—which is by no means flattering to the latter; and he considers that it is education that makes the difference between the two. There is no doubt that it does; but may not the difference in the character of the homes themselves have something to do with it? When a clerk has finished his day's employment a walk is a pleasant change for him. He can therefore have a home of his own by taking a house a short distance in the suburbs, where rent is cheaper; but when the artisan has finished his day's labour he wants rest; so he generally takes one or two rooms as close as he can to his work; and, when a man's home consists of only one room, he cannot feel any very great pride or pleasure in it.

A LONDON WORKMAN.

## THE "SKIP," MIDDLE LEVEL SEWER.

SIR,—In last week's number of the *Builder*, among other remarks on the works of the Middle Level Sewer, you mentioned the peculiarities of a skip now in use upon the works; at the same time saying the form is "borrowed from the works of the Victoria Bridge in Canada."

I beg to say I had the honour of being in charge of the mechanical department of the works of the Victoria Bridge, and constructed several descriptions of skips for that work; but the one in question was designed by myself, a few weeks since, expressly for Mr. Butler's work on the Middle Level Sewer. The advantages of this skip are as follows:—It lowers but a short distance in depositing its contents; at the same time concentrates the materials to the middle of the cart or what else there may be to receive it, without spilling it over the sides.

But the greatest advantage is when the material is of an adhesive nature, such as clay: the rounded shape of the bottom dividing in the middle, allows the whole load to slip out freely, and thus avoid the trouble of scraping and digging out of corners, as is often the case with ordinary skips.

This skip may be useful for many other purposes; further improvements are now being made to perfect it, and a patent is being applied for.

*Woodford.* J. WYMAN.

## CAST AND WROUGHT IRON GIRDERS.

### FAIRBAIRN'S STATEMENT.

SIR,—In looking through "The Engineer's, Architect's, and Contractor's Pocket-book" for the present year, published by Lockwood & Co., I find, at page 353, an extract from Fairbairn's treatise on cast and wrought iron, which reproduces the statement that a wrought-iron beam of the same depth, bearing, and strength, as a cast iron one, would only weigh a little more than one-third that of the cast-iron beam. Mr. Fairbairn's formula $W = \frac{a\ d\ c}{l}$ is the same for both cast and wrought iron, by altering the constant C from 26 for cast iron to 75 for wrought iron, which does give the bottom flange of the cast iron beam about three times the area, and consequently about three times the weight, of the bottom flange of the wrought-iron beam; but Mr. Fairbairn also teaches that the top flange of a wrought iron beam should be twice the area, and consequently twice the weight, of its bottom flange; and that the top flange of a cast iron beam should be only one-sixth of the area, and consequently of the weight, of its bottom flange. The top flange of the wrought iron beam would therefore be four times the area, and consequently four times the weight, of the top flange of the cast iron beam. If we call the bottom flange of the wrought iron beam 2, its top flange would be 4, which, together, would equal 6; while the bottom flange of the cast iron beam of equal strength would be 6, and its top flange 1, which together equal 7, instead of nearly 18, as should be the case did the wrought iron beam weigh only a little more than one-third that of the cast iron beam. A reference to this erroneous conclusion in Mr. Fairbairn's treatise appeared in your journal of October 13th, 1855.

T. M.

## SYDNEY HOUSES OF PARLIAMENT COMPETITION.

SIR,—I am indebted to the last number of the *Builder* for the first authentic information I have received regarding the competition designs for the Houses of Parliament at Sydney. For myself, I can honestly affirm that I have succeeded in this competition to the full extent of my expectations: but I am not, therefore, insensible or indifferent to the fact that, in common with other competitors, I have been unjustly treated; and I think it is very important for the interests of our profession that unfairness in the management of such a competition should be exposed. I therefore claim your assistance.

Having seen only one brief description of the plans, and knowing nothing more about them, I shall confine my remarks to one point, and it is this,—that the conditions of the competition have been violated, to the prejudice of those competitors who respected them, and that the architect who most grossly violated the conditions has been most highly rewarded. That statement is

capable of a categorical denial, I fancy, if capable of denial at all. The explanation of the Minister for Works, as reported in your columns, is a marvel of *simplicity*—in a certain sense. The author of the design marked "I bide," sent a perspective view in outline only—did he?—besides one "very artistically coloured." What a knowing fellow! How well he calculated the effect which mere outline drawing produces in a public exhibition when set side by side with pictures very artistically coloured—even the modest sepia drawing of "Palladio" must have looked dingy beside it! However, it must be admitted that the commissioners were placed in a difficult position. I am quite willing to believe that the design of "I bide" was really the best of the lot; and, for one, I would have exonerated them from any blame in the matter if they had simply prevented the exhibition of the coloured and shaded designs. The conduct of the authors of "I bide" and "Palladio" must, however, be viewed very differently by every honourable member of the profession. And I cannot close these remarks without—by way of practical application—expressing my conviction that if the Royal Institute of British Architects would devise some means which would insure the ignominious expulsion from the profession of every man who deliberately took a mean advantage of his brethren, it would conduce infinitely more to the elevation of our profession in every respect than the plucking of hecatombs of youthful aspirants for honourable distinction.

My own design, being one of the six, is said to have violated the conditions: to this I can only plead "not guilty." I have not the least idea in what respect it can be said to be so.

The author of the design bearing the motto

"FIDE ET VIRTUTE."

---

SIR,—I shall be much obliged by your supplying an omission made by the Sydney papers, in noticing the authorship of the successful designs, and from which you quote in your last number. The address which accompanied my design was, — "*Wm. Henry Lynn, architect* (*Messrs. Lanyon, Lynn, & Lanyon*), 64, *Upper Sackville-street, Dublin.*"

"I BIDE."

## Books Received.

*Some Points of the Educational Question practically considered with reference to the Report of the Commissioners and the New Minute.* By ARTHUR GARFIT, M.A., Curate of Richmond, Surrey. London: Longmans & Co. 1862.

THE author of this volume urges his views both ably and moderately. He is careful, in the preface, to intimate, on this at present rather warmly-discussed question, that he is not going to prove everybody in the wrong, nor to attempt to set everybody right. His views are moderate as well as his mode of dealing with the question. He is of opinion that the new minute will cause a little pressure at first; but that it will give an impulse to education, and be found in the end to be wholesome; leaving practical men such as the author more unfettered in their work; giving assistance more in proportion to merit; and tending to probe their weak points, and so to lead them to amend these. There is no fear, the author thinks, of the minute leading to a more secular plan of education.

To those who are not fully informed on the whole question, Mr. Garfit, in the earlier chapters of his volume, gives, by way of introduction to his remarks on the report and minute, a sketch of the past history of the Education movement, which will afford inquirers an insight into the present position of the whole question.

## Miscellanea.

THE PATENT OFFICE.—The Commissioners of Patents have recently issued their annual report. By this it appears that the surplus of income over expenditure is estimated at 20,000*l.* per annum. The Commissioners are of opinion that this surplus, or a portion of it, should be devoted to building a suitable patent office and museum, and further recommend that a library should be formed.

LENDAL-BRIDGE, YORK. — The town-clerk states that the Lendal-bridge committee has entered into a contract with Messrs. Hawks, Crawshay, & Co., of Gateshead, for the iron work of Lendal-bridge, that the tender amount altogether to about 3,600*l.*, that the work is to be completed in five months and a half, viz.; by the 1st of July; and that in four months and a half one-half of the roadway is to be given up to the corporation. The following tenders were also sent in, in addition to the one which was accepted:—

| | |
|---|---|
| J. Whitelaw, Dunfermline | £6,012 |
| J. Carrick, Pimlico | 5,713 |
| Cliffe, Bradford | 5,023 |
| Handyside & Co., Derby | 4,920 |
| Randallstaff, London | 3,744 |
| Calvert & Co., York (withdrawn) | 3,317 |
| Head, Ashby, & Co., Stockton-on-Tees | 3,170 |
| The Brymbo Iron Company, Wrexham | 2,953 |

NEW STATUE OF LUTHER.—A new statue of Luther has just been erected at Mohra, his native village, near the house in which he was born on the 11th November, 1483. This statue, which is in bronze, is 9 feet high, and stands upon a pedestal of 10 feet in height. This work of art, done by the sculptor Miller, cost 14,000 florins, nearly 1,200*l.* subscribed almost entirely by the Protestant princes of Germany.

A PILE OF GOLD.—It is stated that a contribution to the Great Exhibition will be sent from our colony of Australia, in the shape of an obelisk, or pyramid, representing what would be the size of a nugget of all the gold sent thence to Europe during the last ten years. This pyramid, 10 feet square at the base, and 42 feet high, would, it is estimated, if it were solid gold, weigh 800 tons, of the value of 104 millions sterling. Such, then, is the vast amount of wealth derived from this one colony since the Great Exhibition of 1851.

PRESENTATION TO AN ENGINEER AT CARDIFF.—The employés of the Rhymney Railway have presented the general superintendent, Mr. W. R. Page, with a testimonial of their appreciation of his gentlemanly bearing and uniform kindness during the period of four years in which he has been engaged upon the line. Mr. Page was formerly deputy superintendent of the Taff Vale Railway for a great number of years, and has been connected with railway engineering in Cardiff for a period of twenty-two years. Being about to sever his connection with the Rhymney Railway, the employés and a great number of personal friends presented Mr. Page with a massive gold watch, gold chain, and appendages, of the value of 50*l.*, and also an elegantly-carved cruet-stand, silver salver, and four silver salts.

THE DAVY MONUMENT.—There is much stir in the *Cornish Telegraph* as to the doings of the Working Men's Committee at Penzance who have this matter in hand. A writer under the signature of Publicola states the grounds of complaint. "I told you," he says, "that the advertisement in the *Builder* was for columns only. The secretaries required columns, and so the competitors sent columns. Mr. Perrow, however, the successful competitor [and one of the Committee's own body too], favoured them with designs for a tower and a column, and the tower is accepted! Comment upon such conduct as this would appear superfluous. The ten other competitors, who in their simplicity thought the advertisement meant what it contained, and that, when designs for columns were asked for, columns were required, are virtually left out of the contest; and the lucky Mr. Perrow, with his unasked-for tower, is received." Professor Faraday, we may add, has subscribed ten guineas, with the proviso that his name shall not appear on the prospectus.

TELEGRAPHIC PROGRESS.—At a dinner recently given to Sir Charles Bright at Liverpool, he said that when he first became connected with the Telegraph Company—some ten years ago—the number of miles worked by the company was something under forty, while the present mileage is upwards of 4,000. The staff employed at that time did not exceed, or much exceed, a score in number; while probably 1,500 would not be far off the present number. At that time there was only one telegraph in existence in this country; and, whilst the charge for a message from London to Liverpool was 8s. 6d., the messages were frequently re-transmitted at Rugby and Birmingham. At the present time we have in Great Britain and Ireland something like 15,000 miles of line, and the annual receipts are about 350,000*l.* There is now, in addition to the 15,000 miles of line in Great Britain, some 48,000 miles of line in America, 80,000 miles in Europe, and a smaller but very rapidly-increasing mileage in Australia; the total amount of land lines of telegraph in the world being not far off 150,000 miles.——The British and Irish Magnetic Telegraph Company and the Electric and International Telegraph Company have both decided upon a further reduction of charges for private telegraphic dispatches. The charge for twenty words to London at present is 4s., which will be reduced to 2s. 6d. after 1st February. The following is said to be the scale of charges about to come into force:—Twenty-word messages, 1s. up to 25 miles, 1s. 6d. to 50 miles, 2s. to 100 miles, 2s. 6d. to 200 miles, 3s. to 300 miles, 4s. to 400 miles.——The telegraphic communication between Calais and England has been interrupted for some days, the cable having been broken in mid-channel, by the anchor, it is supposed, of some vessel. A buoy has been placed at one end of the cable, and an active search is being made to get up the other.

THE "ODDITY OF THE ENGLISH." — The following anecdote, illustrative of the "oddity of the English," is now going the round of the papers at Naples. When the telegraph was first opened to Newfoundland, Lord P., a distinguished member of the Senate, came to the office, and said he wished to send a message. "The line is not yet opened to the public, my lord." "But you know me: I have 20,000 shares in your line, and I will give 200*l.* sterling for a message and answer." "Your lordship must wait two hours for a reply." The message was:—*Send me the strongest possible electric spark.*" Lord P. waited till he heard as follows:—"*In one minute the spark.*" His lordship then applied his cigar to the wire, and walked off contentedly, with a light which cost him 5,000 fr. The story is seriously repeated from paper to paper, and is generally believed "without a struggle."

THE BRITISH AND EASTERN STEAM NAVIGATION COMPANY.—Under this title a company is being formed to meet the urgent demand for the immediate establishment of a line of steamers by the overland route, to carry passengers and cargo at the lowest possible rates. For several years there has been a constant demand for increased accommodation by the overland route; and within the last twelve months so unceasing has this been that hardly a mail arrives without bringing Indian newspapers, urging the necessity for more steam accommodation, both for passengers and freight; promising any company that may start a line the warmest support of the Indian public. The directors, comprising Sir Henry Leeke, Captain W. Dicey (late officiating Master Attendant, Calcutta), and others, are well acquainted with the route, and know the requirements of the country. We look to see the new company in operation within six months.

THE KILKENNY ARCHÆOLOGICAL SOCIETY. — The annual meeting of this thriving association took place on the 8th January, Mr. P. Burtchaell, C.E., in the chair; when ten new members were elected. The report of the committee for the year was then read by the secretary. In allusion to the death of the Prince Consort it remarked: "Your committee cannot avoid reminding the members that, although, in consequence of a rule laid down by the Prince for his guidance in regard to local associations, our list of members did not embrace the Prince's name; yet his Royal Highness has been, since the year 1855, a life-member of the Society, having contributed to its funds the sum of 25*l.*—five times the usual life composition. That the 'Journal' of the Society was deemed worthy of a place in the Prince's private library is no mean testimony to its merits when the literary attainments of his Royal Highness are taken into account." Various presentations were made to the Society and other business transacted. The new fact of an Irish Runic inscription was brought under notice by the Rev. James Graves, who, however, did not authenticate it as such. The inscription occurrs at the "Lettered Cave" at Knockmore, county Fermanagh.

THE MULLER ORPHANAGE AT BRISTOL.—Mr. Müller's third Orphan House, at Bristol, is now all but completed. Like its predecessors it has been erected without any one having been either directly or indirectly asked to subscribe a single sixpence; and not one farthing of debt has been contracted. In answer to prayer, Mr. Müller tells us, all this has been done. In the autumn of 1858 the ground was purchased upon which the new house stands, at a cost of 3,631*l.* 15*s.* Mr. Müller's original intention was to provide accommodation for 300. Subsequently he resolved to make provision for 400; but ultimately, on finding that the extra accommodation would involve no great extra outlay, he decided on building a house large enough to contain 450 orphan girls from eight years of age and upwards. The original estimate for building was 35,000*l.* The total receipts for the building fund of the third house, from the commencement to the time the accounts were last made up, have been 46,600*l.* 17*s.* 3*d.* The edifice has no pretensions to architectural grandeur, except from its vast size and the variety of outline, adopted by the architect in its design. In addition to open fires in the different rooms the entire building is heated with hot-water. The provisions made for cooking are complete and economical. The building contains ninety-four different departments, viz. — thirty-six on the ground-floor, thirty-five on the first, and twenty-three on the second floor. The length of the building exceeds 550 feet; and it is lighted by 390 windows, the glass for which was supplied gratis by a glass manufacturer and a glass merchant.

BIRKENHEAD CEMETERY COMPETITION.—The prize and other designs, eleven in number, are being exhibited to the public in the Argyle Rooms, Birkenhead. The exhibition was opened on Thursday, and will close with the week.

EFFECT OF THE LATE FROST ON IRON.—A remarkable instance of the effect of severe frost on iron has occurred at the Ordnance-wharf, Chatham. The large steam-crane was brought into requisition to lift some heavy guns, but scarcely had one weighing 95 cwt. been attached to the gear, than the massive chain which held it suddenly snapped when the cannon was only a few feet from the ground. Not the slightest flaw could be detected in the metal of which the chain is composed, the chain itself being made to sustain double the weight, and only a few days before had been used in lifting weights of seven tons.

LIVERPOOL ARCHITECTURAL SOCIETY.—The eighth meeting of the session, on the 22nd ultimo, was presided over by Mr. Goodall. Mr. G. A. Audsley read the paper for the evening, entitled "The True Principles of Architectural and Decorative Art, or Conventionalism *versus* Naturalism." Mr. Audsley, in his paper, advocated conventionalism as the true principle of decorative art, in opposition to naturalism; and urged that the sculptors of the present day should return to the principles of the ancients,—that they should use the symbol of a flower, for instance, in ornamentation, instead of the flower itself, and avoid naturalism as they would a poison. A vote of thanks was accorded to Mr. Audsley, after which a discussion took place on the paper.

THE WORCESTER SCHOOL OF ART.—The tenth annual meeting of this School has been held, under the presidency of Lord Lyttelton, Lord-Lieutenant of the County. According to the report read, there has been a deficiency in the receipts compared with the expenditure, of about 14*l*. It was stated, however by the chairman, that, during the past year, 248 students had attended the Central School, 36 the class at Pershore, 17 the class at Droitwich, and 100 at Bromsgrove; making in all, 401, or an increase of 41 over the total of the year 1860. The master reports that the pupils of the Worcester Cathedral School have made most satisfactory progress during the year 1861. The number of public schools receiving regular instruction in drawing from masters of the Central School remains the same as in the preceding year; namely, at Worcester, St. Martin's, St. Peter's, and St. John's National Schools, and the British Schools in Clapgate; at Bromsgrove, the National School. The schools in which drawing is taught by their own masters, with occasional visits only from masters of the Central School, are the West Midland Railway School at Worcester, and the National School at Pershore. In these seven schools about 625 children receive instruction in drawing; which, though quite elementary, will no doubt in many instances afford them permanent benefit. Including these children, the total number of persons taught during the past year, either in the Central School or in those connected with it, as above described, is about 1,064.

MONUMENTAL.—A tribute to the memory of the late Mr. Braidwood has been raised by the members of the M division of police. It is a carved monument of Portland stone, designed and executed by Mr. S. H. Gardiner, of the New Kent-road. The illustrative portion of the memorial represents the excitement and peril of a fireman's life. A wreath of laurel stands out in relief, round which entwines a fire-hose, encircling the inscription. It will be placed against a wall, supported by iron brackets, in such a position as to mark the spot where Mr. Braidwood was so suddenly buried in the ruins.——A stone seat has been placed in Holwood Park, Keston, Kent, as a memorial of Mr. Wilberforce, the great champion of negro emancipation. The seat has been erected at the cost of Earl Stanhope. It is placed at the foot of the old oak beneath which a conversation took place between Pitt and Wilberforce, which led the latter to resolve on trying to abolish the slave trade, and is intended for the use of the public.——A monument has been erected in Mitcheldean churchyard to the memory of the late Mr. Timothy Bennett. It is an ornamented Gothic cross, 9 feet high, of white marble. The cross is erected upon a Gothic pedestal, containing an inscription. The two new windows, presented by the late Mr. Bennett to the church, have also been finished since his death. One is placed at the end of the south-east aisle, the other over the organ. The artist was Mr. Bell, of Bristol. The large west window is also about to be restored as a memorial of the late Mr. Bennett.

EXPLOSION OF A KITCHEN BOILER THROUGH FROST.—One of these dangerous and often fatal explosions, which have been of such frequent occurence during the frost of recent years, and more especially in the north of England, has happened in Bury New-road, Manchester. A child was dreadfully scalded by the steam, and burned by the heated grate and burning ashes, and has since died from the frightful injuries she received. The fireplace in the kitchen of the adjoining house was also forced out, and in both houses several windows were broken. The cause of the accident is believed to have been the stoppage of the supply of cold water by the frost, and the consequent undue generation of steam.

CO-OPERATION IN ROCHDALE.—The sixty-eighth quarterly report of the Rochdale Equitable Pioneers' Co-operative Society, dated December 17, 1861, deals with transactions which represented, during the quarter, the receipt and the disposal of nearly 50,000*l*. During the quarter the Society received for goods sold 42,844*l*. 18s. 5d. This amount represents an increase over the receipts for sales during the previous quarter of 324*l*. 2s. 2d. The profit to be divided during the quarter just expired is 4,512*l*.; and the dividend paid is 2s. 1d. upon each 1*l*. of purchase money. The entire profits for the year 1861 amounted to 18,020*l*; "which," as the report observes, "must have been beneficial to a great many members in procuring the common necessaries of life during the present depression of the cotton trade."

EXHIBITION CLUBS.—A suggestion made by us is being carried out in various places to enable workmen to visit the International Exhibition. Thus at the Spring-warehouse connected with the Atlas Steel and Spring Works, Sheffield, a club has been formed to raise a fund to enable the workmen to visit the Exhibition. Subscriptions from 6d. to 2s. 6d. per man are received. A large number of the workmen have become members. The workmen in the employ of Messrs. John & Richard Ibberson, contractors, David-street, Manchester, have also commenced a fund, by payment of sums varying, according to their means, from 2s. 6d. to 6d. weekly. It is received by one of the men, who acts as secretary, and paid over to a member of the firm, who is elected treasurer, and banked weekly. If any member falls sick or is thrown out of employment, he can have back the amount he has paid, but no interest. The interest is to be divided at the close of the fund, according to the amount subscribed by each.

NEW DISASTER AT THE DUNDEE DOCK WORKS.—Another disaster of a serious nature has occurred at the New Dock Works. The east wall of the Lock of Camperdown Dock has been ruined in a moment. After the fracture in October last, of the east wall of the dock, says the *Warder*, it was resolved by the trustees to exclude the sewerage from the lock, pending the construction of a new sewer at a distance from the dock walls, by a cofferdam at its northern extremity. A contract was concluded with Carstairs, Mitchell, & Co. to execute the work, and to pump out the sewerage from the area of the lock, under the superintendence of Mr. Leslie and Mr. Stevenson, engineers. The work went on very successfully: the cofferdam had just been completed: the sewage was almost pumped out; and it was expected that operations would now be in progress for preparing to complete the masonry of the lock walls. An immense discharge of sewage, however, has suddenly burst from the bottom, at a point to the southward of the lock; and it has been discovered that the wall is rent throughout its whole length. The lock was speedily filled with the sewage.

PAINTING, AS A BRANCH OF EDUCATION FOR A BUILDER'S APPRENTICE. — At the Sherborne police court, an apprentice to a carpenter, builder, and joiner, was charged with refusing to obey the lawful commands of his master; the defendant having refused to aid in painting a farm-house under a repairing contract. The complainant gave evidence that it had always been the custom in his business for his apprentices to do such work. For defendant it was shown that no such work was included in his indentures. The magistrates considered house-painting to be included in a builder's work; but a case having been laid before the Recorder of Exeter, the result was an opinion that the magistrates were wrong; for, supposing the case to be reversed, and that the lad was apprenticed to a painter; he could not be compelled to make doors. The bench decided that after this opinion they could not do otherwise than dismiss the case; and, on consideration, they thought, if defendant was bound to do what complainant asked, he might be made to build a wall. They, however, would allow complainant a case if applied for within a proper date.

COPPER IN DURHAM.—A new company is about to be formed for the working of a copper mine near Colliery Dykes, in the county of Durham. Samples of the ore have been pronounced worth upwards of 30*l*. a ton.

SWISS RAILWAYS.—The Swiss Federal Tribunal has pronounced sentence in a suit instituted by Mr. Brassey against the administration of the Central Railway Company, and has decided—1. That the Central Railway shall pay Mr. Brassey the balance due to him under the agreement; 2. That the subsidiary claim of 1,200,000f. made by Mr. Brassey is dismissed; and 3. That the same course shall be adopted as to the claim of the Central Company, requiring of Mr. Brassey an indemnity of 690,000f.

REDHILL AND REIGATE COTTAGE IMPROVEMENT SOCIETY, LIMITED.—The fifth annual general meeting of this Society took place on 18th January, when the report was read and adopted. It stated that the Society had now thirty-nine freehold cottages, occupied by about 200 people; that the loss from empty cottages has been 1*l*. 4s., and from bad debts *nil.*; that the rents for the year amounted to 403*l*. 4s., of which 302*l*. remained at the disposal of the shareholders. A dividend of 5 per cent., less income-tax, was declared.

PROPOSED PIER AT BLACKPOOL. —A project has been started for the construction of a pier at Blackpool. At a meeting recently held, Mr. Galloway, of Manchester, a gentleman connected with the firm which erected the pier at Southport, gave it as his opinion that a pier, constructed on the principle laid down in the sketch which he produced, would, if carried out 450 yards, and made of the width of 21 feet, cost about 7,500*l*. The strength of the structure at this price would be considerably greater than that of the erection at Southport. A committee was formed for the purpose of making the preliminary arrangements, and of deciding on a suitable plan.

NEW BRIDGE AT TWERTON. — A bowstring girder-bridge has just been erected across the river at Twerton. It is said to be built on a new principle, invented by Mr. Joshua Williams, of Bradford-on-Avon; who calls his invention "The Aerial Bridge." It is built with wood, and was erected in twelve days by two carpenters and one smith. In length it is 116 feet clear of the abutments, and it does not weigh more than 4½ tons. There is very little vibration, it is said; and it is estimated that it will bear 19½ tons weight. The extreme length of the bridge is 122 feet, including the stone abutments. It cost less than 70*l*. The inventor states that the principle is applicable to large plans, and would be suitable for railways and other purposes requiring great strength.

THE FORTIFICATIONS AT PORTLAND.—On the east side of the island, which is very seldom visited, the convicts, according to the *Dorset Chronicle*, have been kept busily at work in excavating, trenching, throwing up earthworks, and blowing up rocks, at the East Weir. Batteries have thus been formed at various levels above that of the sea, but all below the Verne Fort, and far more destructive than the fort itself. The works have now been brought to that stage when more skilled labour is requisite, and hence they have been partly handed over to civil labour, and the foundation-stone of permanent barracks, magazines, and stores, has been laid. Messrs. Jay & Co., of London, have the contract for these casemated works.

GAS.—We learn from a paragraph quoted in the *American Gas-light Journal* that the experiments with water-gas are highly satisfactory. About 73 parts of it are derived from water, and the remainder from oil, purchased at nine cents. per gallon. The light is said to be of a better colour than coal gas, and in every respect superior. The same journal, in speaking of the "sound condition of gas companies," says,—"While the shares on railroads, banks, and other corporations, exhibit fluctuations in value and an uncertainty as to paying dividends upon their capital stock, the condition of gas-light companies shows a marked contrast. Our foreign exchanges are filled with dividend notices of gas companies; and particularly in England, where the price of gas is very low, the returns are large, and afford a gratifying evidence of the profitable nature of the business, and of the accommodation offered to capitalists in the way of investment."

## TENDERS.

For stabling, at Putney Heath, for Mr. John Bruce. Mr. Robt. Blessley architect:—

| | |
|---|---|
| Fawcett | £525 9 9 |
| Avis & Son | 495 0 0 |
| Adamson & Sons | 458 0 0 |
| Dawson | 419 5 0 |
| Manley & Rogers (accepted) | 415 0 0 |